Title	Abstract
Demystifying SAS Viya, Q&A, Slides, and On-Demand Recording	Keith Renison covers the four key pillars of SAS Viya that enable you to make confident decisions at every moment: reality tested AI, resilience amid uncertainty, fast outcomes and trusted results, and for everyone, everywhere.
What Do I Need to Know About SAS® Viya® Security?	Join Bala Arunagirinathan as he teaches you about SAS Viya security. Administrators will gain the knowledge and confidence to design and implement a comprehensive security model for their existing or future SAS Viya projects.
Watch this Ask the Expert session on promoting content between your SAS® Platforms.	Join Kevin Bickford as he discusses the steps for moving content within Viya (promoting content from SAS Viya dev, test to prod) and from SAS 9.4 to Viya using promotion tools.
Go-To List of SAS Support Resources Q&A, Slides, and On-Demand Recording	Gain access to the most helpful SAS support resources. These are sure to come to the rescue if you get stuck and need some help.
SAS® Quickstarts on Microsoft Azure for SAS® 9.4 and SAS® Viya®	Learn how to quickly deploy SAS® Viya® alongside SAS® 9 or SAS® Grid in Microsoft Azure.
What Are Best Practices for Using SAS® Survey Procedures?	Join George Fernandez as he discusses why survey analytics differs from other standard statistical procedures. He will cover data exploration, description, model building and interpretation.
Best Practices for Upgrading to the Latest Version of SAS®9?	Join Brian Kinnebrew as he discusses the best practices for upgrading to the latest version of SAS®9 (SAS 9.4 M7) and why it's important to upgrade this year.
How Do I Move SAS® Applications to a Public Cloud?	Learn important performance considerations for SAS® 9 and SAS® Viya® when hosted in any available public clouds and how to configure the cloud infrastructure to get the best performance with SAS.
Prepare Your SAS Visual Analytics on SAS 9 for Adobe Flash End of Life	Prepare your SAS Visual Analytics deployment on SAS®9 for Adobe Flash end of life on Dec. 31. We cover two update paths and review case studies from customers who have already transitioned.
What Are the Top 10 Tips for SAS® Viya® Administrators?	SAS administrators must create and perform many varied tasks. Not all of them are obvious or easy. It is useful to have a checklist of tasks to choose the most relevant, so you know what to do and when, to make the most of your SAS Viya deployment over the long term.
How Do I Move From SAS® Enterprise Miner™ to SAS® Viya®? Q&A, Slides, and On-Demand Recording	Learn how to move from SAS Enterprise Miner to SAS Viya.

How Do I Access the SAS® Training Resources that Best Suit My Needs?	Overwhelmed with the number of great looking choices for SAS training? Not sure where to start? SAS Technical Training Consultant Anna Rakers discusses how to access the SAS training resources that best suit your current needs as well as prepare for future career advancement.
How Do I Democratize Data and Govern Information? Q&A, Slides, and On-Demand Recording	Discover how you can find the right data with the right quality in significantly less time and with less effort.
How Can I Save Time and Build Trust With My Data Preparation?	Learn data-driven, self-service data preparation techniques like transforming, blending, shaping and creating computation variables (feature engineering).
Getting Data Into SAS® Viya® – What Data Fits and How?	Join SAS expert Rex Pruitt as he guides you through a discussion on the ease of data access, automation of the data load process and engineering the best solution for your SAS® Viya® environment.
Why Do I Have Missing Data and How Do I Fix it?	Hear SAS expert Melodie Rush define missing values, why and when they occur and how to manage them. She will discuss functions, procedures and how products like SAS® Enterprise Guide®, SAS® Enterprise Miner™, SAS Studio and SAS® Viya® deal with missing values.
How Can SAS Help Me Become a Premiere Data Scientist?	I interviewed seasoned data scientist, Carlos Pinheiro. He shared how he's seen the field evolve through a variety of industries around the world and the lessons he's learned along the way. Whether you're an experienced professional or just starting your career, you will learn how you can make the most of your resources to build in-demand skills to advance and lead in the technology-driven world of analytics. We shared information on SAS e-learning and SAS certification, helping you build a foundation for data science success.
Intro to Machine Learning	Join Melodie Rush as she discusses what machine learning is and shows you examples of specific machine learning techniques, including random forest, gradient boosting, support vector machine, neural networks and K-means.
How Do I Get Started with SAS Visual Data Mining and Machine Learning?	This session provides information on how SAS Visual Data Mining and Machine Learning is designed for the data scientist, statistician and advanced business analyst.
A Tour of SAS Viya Programming and Application Interfaces: A Forest Modeling Example	Join us to learn how to accomplish the same forest modeling in SAS Viya using a variety of programming and application interface methods.
Best Practices for Data Scientists and Analysts:	best practices to consider when presenting your analytics findings to colleagues and decision makers.

Communicating Your Results	
How Do You Work with APIs in SAS® Viya®?	Join Joe Furbee as he shows you the entire model development lifecycle, from folder creation to uploading and imputing data, to creating and deploying a model.
Using SAS APIs	Unbeknownst to many people, the world is running on APIs. From web and mobile apps, to buttons, badges and widgets, and even physical devices like thermostats, smoke detectors, cars and glasses, they all depend on APIs to 'talk' to other systems. This is also the case for software for analytics, report building, and model management. SAS has APIs to help integrate open source technologies and languages to perform analytics and create applications. In this webinar you will learn how to interact with SAS Viya and CAS REST APIs to create and access SAS resources using any client technology. We'll also explore the roles that developer.sas.com and GitHub can play, as well as resources to find more information, like API documentation, SAS Communities and blog posts.
How Do You Use Open Source With SAS® Event Stream Processing?	Learn how to use SAS® with open source to extract value from streaming data.
A SAS9 Customer's Journey to SAS Viya	Hear the University of North Texas' migration story from SAS®9 to SAS® Viya®.
How Do I Migrate Data From One DBMS to Another?	Join Rex Pruitt as he discusses the considerations you need to address before taking on a database migration.
How Do I Migrate SAS® Event Stream Processing Workloads to Microsoft Azure?	Join Steve Sparano and Steven Allen as they discuss and show a demo on migrating SAS Event Stream Processing workloads to Microsoft Azure.
Machine Learning Models in SAS Event Stream Processing (ESP) - Integrate and execute on the Edge	This session looks at the needs and capabilities of streaming analytics and how to incorporate machine learning models.
What Are the Ways to Diagnose Infeasibility?	Learn to diagnose and understand why an optimization problem is infeasible and how to make it feasible.
How Do I Build a Macro Application? Q&A, Slides, Code, and On-Demand Recording	Join Stacey Syphus as she shows you how SAS macro programming can reduce the amount of time that you spend on the development and maintenance of SAS programs by providing programmers with the ability to write SAS code that will rewrite itself. The techniques you'll learn during this webinar can minimize the amount of SAS code that you need to write to perform common tasks. In this presentation, you'll see an example of how to turn a SAS program into a macro application.

How Do I Fix Common Problems in Output From ODS Graphics? Code, Q&A, Slides, and On-Demand Recording	Learn how to avoid common pitfalls when using ODS Graphics procedures.
What Are Current Challenges and Opportunities in Analytics? Q&A, Slides, and On-Demand Recording	Join Professor Bart Baesens as he discusses the key requirements of a good analytical model including accuracy, interpretability, profitability, operational efficiency and compliance. He'll also cover how to boost the performance of analytical models and review emerging challenges in analytics.
Why Is the Log Report a Programmer's Best Friend?	Join SAS customer Peter Knapp as he discusses why it's so important to review the log for problems to ensure your programs run without mechanical errors and deliver the desired results. He'll show you how to automate this process, making your life easier and providing an easy tool to help analysts with the debugging process. See a demo in SAS® Enterprise Guide® and SAS® Studio.
Top 10 Syntax Errors and How to Fix Them.	Make sense of the sometimes-odd messages in your SAS log. Perfect for beginning and intermediate Base SAS programmers.
How Can I Create Graphs Using SAS®?	Learn to harness the power of SAS to create meaningful graphs using Statistical Graphics procedures and Graph Template Language (GTL).
SAS® Job Execution Web Application: What It Is & When to Use It	Included as part of SAS® Viya®, the Job Execution Web Application provides developers an environment to develop and run applications that can both access data and apply the complete Viya feature set of analysis and presentation procedures.
SAS® Viya® Architecture and Data Movement: A SAS® Programmer's Overview	learn about SAS Viya architecture and programming methods for data access and management.
Proc SQL or Proc FEDSQL: Which Should a Programmer Use?	Learn when and how to use PROC FedSQL and when it offers benefits over PROC SQL.
How Do You Use SAS® to Access Data and APIs From the Web?	Join SAS expert Chris Hemedinger as he demonstrates how to use specialized statements and techniques within SAS to pull data from live internet sources using your SAS programs with no additional process. No need for a separate script in Python or cURL – SAS can do it all. Access data from any API, including services like Google Analytics, GitHub, Microsoft365 and more.
What's New in SAS Studio 5.2?	Get in-depth insight into the SAS Studio 5.2 interface and it's utilities. You can watch on-demand at your leisure.

10 Ways to Make Your SAS® Code Run More Efficiently	Learn how to use your compute and SAS language concepts and processing to make your programs more efficient. In many cases, this translates to running faster. I'll share 10 easy-to-understand, unique and effective tips for you.
How Do I Integrate SAS® Viya® and Open Source?	SAS delivers an open analytics platform, built on the latest cloud technology and accessible from the interface or in the coding language of your choice, giving you the freedom to experiment and create. Combining the power of SAS with open source technologies, you can unify disparate tools and analytic assets into a streamlined, collaborative environment – fostering productivity, business agility and tangible results.
How Can I Run My DATA Step Programs in SAS Viya?	If you're a longtime SAS programmer, and concerned your skills won't translate to SAS Viya, don't worry. You can use all your valuable programming skills in Viya. In fact, this leading-edge software from SAS represents a whole new world to grow your skills and use them for greater contributions to your organization.
How Do You Manage Your SAS Projects With Git?	Are you asked to use source management and DevOps tools to manage your work and integrate with production? Git – the most popular source-management system – is often central to this integration.
SAS® Enterprise Guide®: 20 Tips in 20 Minutes	Want new ways to make the most of SAS® Enterprise Guide®? Our SAS® expert, Kelly Gray, delves into quick tips and tricks that make working in SAS® Enterprise Guide® a breeze. These tricks are simple, and you're bound to find one that will work perfectly for you and your needs.
Leveraging SAS® Viya® to Improve SAS® Processes	The SAS Platform is greatly enhanced by SAS Viya. In this session, Steven Sober and Brian Kinnebrew share their experiences in leveraging SAS Viya to improve SAS processes. They explore technical insights and implementation details to CAS-enable your code, thus achieving faster results. These techniques are illustrated by real-life case studies.
Gaining Efficiencies in SAS Enterprise Guide	Understand recommended ways to organize your work in Enterprise Guide
How to Use Popular PROCs in SAS/STAT	Learn about the comprehensive set of tools that SAS/STAT offers, more than 100 procedures for statistical analysis, and how it is scalable to meet your needs.

Introduction to Hierarchical Linear Models	Hierarchical linear models are used to analyze hierarchical data structures where multiple micro-level units are sampled for each macro-level unit. A common example of hierarchically structured data comes from the education field where students are nested within classrooms. Another example is from medical research where patients are nested within physician. The advantages of hierarchical linear models are that they are parsimonious, they take into account the dependence in the data, they enable you to make inferences to the population of groups, they conform to the sampling design, and they enable you to examine the effects of individual-level and group-level influences simultaneously. Hierarchical linear models are fit using the MIXED procedure in SAS/STAT.
Getting Started with Geo Analytics in SAS® Visual Analytics	Join Robby Powell, a Product Manager at SAS, as he discusses how adding geographic context to your categorical and quantitative data through geographic visualizations can present patterns that help you understand why things happen and what you can do to encourage certain behavior or change outcomes.
How Can I Visualize Global COVID-19 Survey Data?	In the battle against COVID-19, analytics can be one of our greatest assets. SAS Visual Analytics provides a complete platform for analytics visualization, helping identify previously hidden patterns and relationships in data. See the interactive design in action and how to display your data in an external environment. Our SAS experts cover the process in preparing data for analysis and how to create reports.
Using Events to Improve Your Forecasts in SAS® Viya® Visual Forecasting?	Learn how to use Events in SAS Visual Forecasting as a simple yet powerful tool to improve the accuracy of forecasting models. This webinar is intended for SAS users who have a good understanding of SAS® Viya® Visual Forecasting.
How Do I Get the Most From AI-Enhanced BI With SAS® Visual Analytics?	During this webinar, I demonstrated the AI-enhanced business intelligence features that are baked right into the latest release of SAS Visual Analytics (VA) for SAS Viya.
Choose Your Own Adventure - Data visualization in SAS Viya	Your data has a lot to say and people in your organization are hungry for meaningful information. Satisfy them by taking advantage of SAS Visual Analytics to build interactive reports that engage the audience.

The Essential Guide to Bootstrapping in SAS	The bootstrap method (Efron, 1979) is one of the most important innovations in statistics in the 20th century. This talk introduces the bootstrap method and discusses when it should be used. This example-driven presentation includes best practices for implementing bootstrap programs efficiently in SAS. An inefficient bootstrap program can take hours to run, whereas a well-written program can give you an answer in an instant. If you want to learn more about the bootstrap method and prefer "instants" to "hours," this talk is for you!
section 508 and Maps: Breaking Down Barriers for People With Visual Impairments or Blindness	SAS informats, formats, functions, date/time constants and date directives. You will learn how: SAS stores date, time and datetime values.-SAS informats can be used to read common date and time expressions.-Date and time formats can specify how the values are displayed.-SAS functions can be used to extract information from dates, times and datetime values.-Using directives can help specify templates for date, time and datetime values.
Getting Started with SAS	Plan your migration to SAS Viya using SAS®9 Content Assessment. You will learn: -What the SAS®9 Content Assessment is. -Why it is important. -How to run the SAS®9 Content Assessment. -How to review the results. -The next steps.
Why are Data Catalog and Data Governance So Important?	Learn the importance of data catalog and other data governance areas such as lineage, data discovery and data preparation to improve the delivery of analytic insights. You will learn: -Some of the common challenges hindering or decreasing the analytic pipeline delivery and business benefits. -How to get reliable, trusted data quicker to maximize benefits from the data for reporting or analysis. -How to integrate open source products.
When Do I Use SG Procedures vs Graph Template Language?	Learn the pros and cons of each method along with a process for deciding with method to use.

How Do I Use Command-Line Interface in SAS Viya?	Learn how the command-line interfaces (CLIs) support automation and allow administrators to perform numerous administrative tasks in batch as an alternative to using the SAS Environment Manager interface.
How Do I Combine Data in SAS?	Learn the basics of SQL Joins, the SAS DATA Step Merge and the SAS Studio Query Utility. We will demonstrate, compare and contrast each of these methods for combining data in SAS.
How Do I Migrate from SAS 9 to SAS Viya?	Examples from customers who have migrated to SAS Viya. We'll cover why they chose to migrate, considerations before migration, resources needed, challenges and benefits. You will learn: -The benefits for IT and SAS users of a more modern cloud platform. -The resource and platform requirements to support the modernization. -The key benefits and differences in a new, modern approach for analytics.
How Do I Debug SAS DATA Step?	Learn how to use the SAS DATA Step Debugger to save time and become a more productive programmer. Chris Hemedinger presents and will host a live Q&A. You will learn:-What the SAS DATA Step Debugger is and where to find it.-How to use the debugger to set breakpoints, watch values and solve logic problems.-The limitations of the debugger.
Getting Started With SAS® Visual Text Analytics	Learn how to use SAS Visual Text Analytics to evaluate large, human-generated unstructured text data sources.
Can I Deploy SAS® Viya® On-Premises Using Red Hat OpenShift Container Platform?	Learn how SAS Viya supports deploying on OpenShift on VMware, giving you an on-premises deployment option.
How Can SAS Intelligence & Investigation Mgmt Support Vulnerable Populations?	Learn how modern policing can use data and analytics to better serve and protect vulnerable populations.
What are the Analytical Capabilities of SAS VA?	Learn the analytical capabilities of SAS Visual Analytics to dive deeper into your data by bridging the gap between data exploration and advanced analytics.
Why Choose Between SAS DATA Step and PROC SQL When you can have both?	As a SAS coder, you've often wondered what the SQL buzz is about. Or vice versa you breathe SQL & don't have time for SAS. Learn where the SAS DATA Step has a distinct advantage over SQL and where you just can't beat SQL. Learn which tool will better help you in reading raw data, joining data, accumulating data, aggregating data and managing data. All skill levels welcome, but some knowledge of SAS DATA Step and SQL beneficial to make the most of this session.

How Do I Use Open Source with SAS Viya?	Learn the many ways SAS Viya integrates with open source.
What are the Convolutional Neural Networks & How are they used for computer vision?	Learn the building blocks of a convolutional neural network and how to apply one to solve computer vision tasks through a demonstration. The presenter will take you beyond the convolutional neural network model to discuss important considerations for image transformations and transfer learning to reduce model data bias.
Getting to know SAS Viya.	Learn what Viya is, its key attributes, how users in different roles interact with Viya, and how it provides support for the complete analytics life cycle, turning massive amounts of raw data into actionable insights.
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Statistical Communication and Visualization of COVID-Related Concepts	Cumulative cases, doubling times, "flatten the curve," ..... In the early days of the pandemic, the public was bombarded with new words, new ideas, and new data visualizations. This talk reviews some of the early COVID-related graphs that appeared in the media. I disucss why some were confusing to non-scientists. I show ways to improve the visualiziations and calrify the concepts. Clear communication enables the public to better understand the pandemic and its risks.
PROC SQL vs. DATA Step Programming	Everyone wants to know: Should I use the DATA step or PROC SQL to join this data? Take a behind the scenes look at how the DATA step and SQL procedure process data by comparing all types of joins (inner, left/right, outer) with multiple types of data (one-to-one, one-to-many, many-to-many).
Getting Started With Bayesian Analytics	The presentation will give a brief introduction to Bayesian Analysis within SAS. Participants will learn the difference between Bayesian and Classical Statistics and be introduced to PROC MCMC.
Getting Started With Gradient Boosting	Gradient boosting is a machine learning algorithm that produces predictions from an ensemble of other, simpler, models. This algorithm is a top performer in many data science competitions and is used for

	classification and regression tasks across a wide variety of industries and applications. This talk covers the fundamentals of gradient boosting models and options for optimizing the algorithm's performance. The aim is to present these topics to you in an intuitive and informal way.
Getting Started With Logistic Regression	This presentation provides a brief introduction to logistic regression analysis in SAS. Learn differences between Linear Regression and Logistic Regression, including ordinary least squares versus maximum likelihood estimation. Learn to understand LOGISTIC procedure syntax, use continuous and categorical predictors, and interpret output from ODS Graphics.
Getting Started With Machine Learning	Machine learning algorithms have been available in SAS software since 1979. This session provides practical examples of machine learning applications. The evolution of machine learning at SAS is illustrated with examples of nearest-neighbor discriminant analysis in SAS/STAT PROC DISCRIM to advanced predictive modeling in SAS Enterprise Miner. Machine learning techniques addressed include memory-based reasoning, decision trees, neural networks, and gradient boosting algorithms.
Getting Started With Mixed Models	This introductory presentation is intended for an audience new to mixed models who wants to get an overview of this useful class of models. Learn about mixed models as an extension of ordinary regression models, and see several examples of mixed models in social, agricultural, and pharmaceutical research
Getting Started With Mixed Models for Business	For decades, mixed models have been used by researchers to account for random sources of variation in regression-type models. Now, they are gaining favor in business statistics for giving better predictions for naturally occurring groups of data, such as sales reps, store locations, or regions. Learn about how predictions based on a mixed model differ from predictions in ordinary regression and see examples of mixed models with business data.
Getting Started With Multilevel Modeling	In this presentation you will learn the basics of working with nested data, such as students within classes, customers within households, or patients within clinics through the use of multilevel models. Multilevel models can accommodate correlation among nested units through random intercepts and slopes, and generalize easily to 2, 3, or more levels of nesting. These models represent a statistically efficient and powerful way to test your key hypotheses while accounting for the hierarchical nesting of the design. The GLIMMIX procedure is used to demonstrate analyses in SAS.

Getting Started With Penalized Regression Models	In the age of big data and high dimensionality, it is important to remove erroneous predictors from your model. Reducing the number of variables provides a more interpretable model, but it can also increase the predictive performance and generalizability of the model. Common variable selection techniques, such as forward, backward, and stepwise selection, provide a more parsimonious model, but do not always improve its prediction accuracy. To overcome this pitfall, penalized regression techniques, such as LASSO, Ridge, and Elastic Net, were proposed. These methods alter the likelihood of the model by including a regularization penalty that forces some parameters out of the model. In this getting started talk, we discuss the advantages of different penalized regression methods and show how to apply the regularization using the GLMSELECT procedure for a more parsimonious and predictive model.
Getting Started With Survival Analysis	Modeling time to an event poses particular challenges that are different from either logistic regression or linear regression modeling. This presentation will give you the essentials to start using this technique right away, make sense of censored data, the classes of models that are most commonly used, and how to explain your findings in a meaningful way.
Getting Started With Time Series Analysis in SAS Studio	SAS Studio offers a collection of tasks for performing time series analysis. Learn the essentials of this useful class of analyses for understanding a series over time and forecasting future values. This presentation will give you the essentials to start using these techniques right away, make sense of the results, and explain your findings in a meaningful way.
You Want ME to Use SAS® Enterprise Guide®?	Starting with SAS®9, one copy of SAS Enterprise Guide is included with each PC SAS license. At some sites, desktop PC SAS licenses are being replaced with a single server-based SAS license and desktop versions of SAS Enterprise Guide. This presentation will introduce you to the SAS Enterprise Guide product, and provide you with some good reasons why you should consider using it.
An Overview of the ODS Destination for Excel	A new ODS destination for creating Microsoft Excel workbooks is available starting in the third maintenance release of SAS 9.4. This destination creates native Microsoft Excel XLSX files, supports graphic images, and offers other advantages over the older ExcelXP tagset. The presentation highlights several old and new features of this destination.

Integrating SAS® and Microsoft Excel: Exploring the Many Options Available to You	This presentation explains some techniques available to you when working with SAS and Microsoft Excel data. You learn how to import Excel data into SAS using the IMPORT procedure, the SAS DATA step, SAS Enterprise Guide, and other methods. Exporting data and analytical results from SAS to Excel is performed using the EXPORT procedure, the SAS DATA step, SAS Enterprise Guide, the SAS Output Delivery System (ODS), and other tools. The material is appropriate for all skill levels, and the techniques work with various versions of SAS software running on the Windows, UNIX (including Linux), and z/OS operating systems. Some techniques require only Base SAS and others require SAS/ACCESS Interface to PC Files.
Manipulating Statistical and Other Procedure Output to Get the Results That You Need	Many scientific and academic journals require that statistical tables be in a specific format (for example, the American Psychological Association [APA] style). This presentation shows you how to change the output of any SAS procedure to conform to any journal or corporate style. You'll learn how to save data from any SAS procedure, change the data format using the DATA step, and dynamically create a format based on your data. You'll also use the SAS Output Delivery System (ODS) inline formatting functions and style overrides, and produce several output formats, including HTML, RTF (for Microsoft Word), PDF, and Microsoft Excel files. Finally, you'll learn how to create and deliver the output on-demand using SAS server technology. This presentation is appropriate for all SAS skill levels.
Diagnosing the Most Common SAS® Viya® Performance Problems	Applications and the scalable computing environments in which they run have grown in complexity with more advanced technologies. With the mixture of virtual machine, cloud, and emerging container environments, diagnosing the causes of performance issues can be difficult. Relying on significant experience from the SAS Performance Lab, this presentationpresentation will show the most common SAS Viya performance problems and methods for their diagnostics and correction.
Essential Performance Tips for SAS® Visual Analytics	Troubleshooting performance-related issues across distributed systems is a challenge and needs a step-by-step approach to identify the cause of the bottleneck. When it comes to performance, there are myriad factors, with each one contributing in its own way to the overall problem. Because SAS Viya is a broad system with many distributed layers, the complexity makes the problem hard to solve, and often causes approaches to fail on given architectures. This presentation will take a holistic look at the SAS Viya system and explore the methodology for diagnosing performance problems with SAS Visual Analytics. Using a customer use case, we will demonstrate diagnostic steps, forensic process and the tools and methods involved. In order to optimize user experience and performance with SAS Visual Analytics, thought and effort should be put into the architecture of the application and the underlying infrastructure layers. Components of the system should be

	highly responsive on all pieces of the application service. We'll examine each layer of the SAS Visual Analytics system until we arrive at its core. Each layer has a rich set of performance-related information to offer along the way.
How to Maintain Happy SAS® Viya® Users	Today's SAS Viya environments support many concurrent processes, utilizing ever-growing data volumes. To help SAS Viya users remain productive, SAS administrators must ensure that its applications have sufficient and properly configured compute resources that are continuously monitored. Understanding how all the SAS components work and how they are employed by your users is the first step. The guidance offered in this presentation helps SAS administrators configure and tune SAS Viya hardware, operating systems, and infrastructure. This tuning and configuration will keep their SAS Viya applications performing optimally and their user community happy.
Important Performance Considerations When Moving SAS® to a Public Cloud	When choosing a hardware infrastructure for SAS applications, you need a solid understanding of all the layers and components of the SAS infrastructure. You also need to not just successfully run the software, but optimize its performance. Finally, you need an administrator to configure and manage the infrastructure. This presentation discusses important performance considerations for SAS®9 (including SAS Grid Manager) and SAS Viya when hosted in any public clouds, including Amazon Web Services (AWS), Microsoft Azure, and Google Cloud Platform (GCP), etc. It also shows how to configure cloud infrastructure to maximize performance with SAS.
Resources for SAS® Administrators and Architects: What You Need to Know to Get the Job Done, Hassle-Free	As a SAS administrator or architect, you are expected to know everything related to SAS – and there's a lot to know. What is available to you? Where do you find all this information? Attend this discussion and walk away with a multitude of resources to help you and your customers succeed with SAS.

SAS® Viya® Monitoring Using Open Source Tools	Did you know that SAS Viya has an event-driven infrastructure that gives you access to a continuous flow of logs, metrics, and other activity? This presentation discusses the event-driven architecture of SAS Viya and demonstrates how you can use it to send logs, metrics, and events to leading open source tools. See how to export metrics to Prometheus, and set up custom alerts triggered when specified thresholds are met or exceeded. Understand how to use Grafana to visualize metrics on dashboards tailored to your needs. Learn how to send logs and events to ElasticSearch and efficiently filter, search, and report on this data using Kibana.
SAS® Grid Manager and SAS® Viya®: A Strong Relationship	SAS Grid Manager and SAS Viya implement distributed computing according to different computational patterns. They complement each other in providing a highly available and scalable environment to process large volumes of data and produce rapid results. From finding the best way to allocate tens of jobs on multiple machines, to allocating huge amounts of data to quickly analyze in parallel, this presentation shows how to architect and implement SAS Grid Manager and SAS Viya to effectively support your business.
Automation in SAS® Visual Data Mining and Machine Learning	Automated machine learning can help every data scientist, from the novice to the most experienced practitioner. This presentation demonstrates the different levels of automation available in the Model Studio environment of SAS Visual Data Mining and Machine Learning software. You can choose to have features automatically constructed or to automate the process of algorithm selection and hyperparameter tuning by using dedicated Model Studio nodes in the pipeline that represents your machine learning process. You can build on or edit a pipeline that includes these nodes, inserting your domain expertise into the process. Alternatively, you can ask the software to automatically build an entire pipeline that includes various feature engineering steps and predictive models, optimized for your specific data according to the assessment criterion of your choice. The included models are determined using Bayesian optimization to perform hyperparameter tuning across multiple modeling algorithms. Not only do these automation techniques aid and accelerate the modeling process for beginning users, but they also relieve expert data scientists of the burden of iterating through various feature engineering steps, model hyperparameter values, and modeling algorithms, enabling them to focus on solving the problem at hand.

Causal Effect Estimands: Interpretation, Identification, and Computation	In modern statistics and data science, there is growing attention on estimating causal effects by using data from nonrandomized or imperfectly randomized studies. This task arises in applications such as post-approval analysis of medical treatments, evaluation of public policies, and assessment of marketing campaign efficacy. One challenge of these applications is the variety of causal effects that you can estimate. For example, you might need to determine whether to estimate the average treatment effect (ATE), the average treatment effect for the treated (ATT), a mediated effect, or other conditional effects. Identifying the causal effect most relevant to your application can have important implications for determining what approach to causal inference is most appropriate. This presentation provides an overview of different types of causal estimands, a comparison of how the different estimands are interpreted, and guidance on how identifying an appropriate estimand can help you determine an appropriate causal analysis workflow. The CAUSALGRAPH, CAUSALMED, CAUSALTRT, and PSMATCH procedures in SAS/STAT® software are used to demonstrate the workflow. The presentation also includes a review of the assumptions that are required for identifying and estimating causal effects.
Getting Started With Deep Learning and Computer Vision	Computer vision technologies are being used in new applications across industries to solve both familiar and unfamiliar problems. For some tasks, computer vision models have surpassed human accuracy. In this getting started talk, participants will learn the pivotal aspects of computer vision and the building blocks of a convolutional neural network. Participants will learn both the science and the art behind deep learning.
Getting Started With Time Series Creation, Exploration and Feature Extraction	Sequential data presents analysts with several challenges in the context of applied forecasting, data mining and machine learning. The data is usually transactional and needs to be transformed or aggregated into a time series. Discovery of patterns in the time series data informs choices related to the specification and selection of forecast models. Features can be derived from time series via techniques like Similarity and Motif analyses. Further, the aggregation, discovery and feature creation steps are interrelated. In this talk, you will be introduced to Visual Forecasting functionality that provides solutions for these challenges. The aim is to illustrate how Visual Forecasting tools aid the analyst in each step of the aggregation, exploration and feature creation process.

Giving Your Model a Voice: Natural Language Studio and SAS® Visual Data Mining and Machine Learning	Your team is using SAS Visual Data Mining and Machine Learning software to build complex yet trustworthy models. You've probably even built internal tooling or automated pipelines to consume and use those models. However, often just as difficult as building good models is exposing them in ways that are useful to your consumers – that is, making the models both available and approachable. Using Natural Language Studio from SAS, you can easily expose the models you've built to users in the most comfortable setting available: human language. Then, not only will those analytics be available at the edge of user clients (anywhere text is supported), but users will be able to ask questions, in natural language, about the insights they seek. This presentation looks at building a simple chat application that exposes a model built in Model Studio and shows how the output of that model can be used to interact with a user during a conversation. Specifically, it dives into the Natural Language Studio interface to build conversational flows directed at answering user questions by scoring models built in Model Studio.
How to Build a Text Analytics Model in SAS® Viya® With Python	Python is widely noted as one of the most important languages influencing the development of machine learning and artificial intelligence. SAS has made seamless integration with Python one of its recent focal points. With the introduction of the SAS Scripting Wrapper for Analytics Transfer (SWAT) package, Python users can now easily leverage the power of SAS Viya. This presentation is designed for Python users who want to learn more about getting started with SAS Cloud Analytic Services (CAS) actions for text analytics. It walks them through the process of building a text analytics model from end to end using a Jupyter Notebook as the Python client to connect to SAS Viya. Areas that are covered include loading data into CAS, manipulating CAS tables using Python libraries, text parsing, converting unstructured text into input variables used in a predictive model, and model scoring. The ease of use of SWAT to interact with SAS Viya using Python is showcased throughout the text analytics model building process.

Incorporating Prior Information Into Your Model Using Bayesian Methods in SAS®Econometrics	In addition to data, analysts often have available to them useful auxiliary information about inputs into their model – for example, knowledge that high prices typically decrease demand or that sunny weather increases foot traffic at outdoor shopping malls. If used correctly and incorporated carefully into the analysis, the auxiliary information can significantly improve the quality of the analysis. But this information often goes ignored. Bayesian analysis provides a principled means of incorporating this information into the model through the prior distribution, but it does not provide a road map for translating auxiliary information into a useful prior. This presentation reviews the basics of Bayesian analysis and provides a framework for turning auxiliary information into prior distributions for parameters in your model while using SAS Econometrics software. It discusses common pitfalls and gives several examples of using the framework.
Neural Network-Based Forecasting Strategies in SAS® Viya®	Recent literature indicates that hybrids of machine learning and classical time series models are among the top contenders in accurately forecasting the future. Classical linear models are parsimonious and often perform well, but they are unable to capture nonlinear relationships in the data. On the other hand, machine learning models such as neural networks (NN) are very good at modeling nonlinear effects. Knowing when and how to use machine learning models might seem difficult, but these decisions can be distilled down to best practices that any analyst can use with little experience. This presentation discusses several NN-based modeling strategies available in SAS Visual Forecasting software and the important factors to consider in choosing and training a model. The discussion includes key features of the data that inform the decision to use machine learning models, feature generation options to augment the training process, and best practices to fit a robust model. This knowledge will enable you to leverage the advantages of both NN and linear models to achieve more powerful forecasts.
Open-Source Model Management With SAS® Model Manager	Open source models that are developed in Python, R, TensorFlow, etc., are increasingly important to organizations that produce and deploy analytical and machine learning models. Not only are the models created using open-source tools, they are deployed to open-source environments that use Docker and Kubernetes in place of more traditional environments. SAS Model Manager is evolving to be a management platform that handles traditional SAS models and open-source models as equal partners. This presentation will discuss strategies for managing the life cycles of Python, R, and TensorFlow models using SAS Model Manager.

Optimizing Supply Chain Robustness Through Simulation and Machine Learning	Would you like to know how brittle your supply chain is? This presentation demonstrates how SAS Supply Chain Simulator, built on SAS/OR® software, gives companies the power to identify the key contributors of risk in their supply chains. This scalable supply chain simulator, driven by existing enterprise resource planning data, enables the analysis of thousands of scenarios to perform risk-and-return trade-off and maximize robustness of supply chains at minimal cost. Computational efficiencies are achieved through an integrated use of SAS Simulation Studio and SAS Visual Data Mining and Machine Learning software.
Recent Developments in Survival Analysis With SAS® Software	Are you interested in analyzing lifetime and survival data in SAS? If you are, then SAS/STAT and SAS Viya offer a suite of procedures and survival analysis methods that enable you to overcome a variety of challenges frequently encountered in time-to-event data. This presentation brings you up to date with new approaches and procedures in SAS and gives you an overview of how to use these procedures to overcome the challenges inherent in conducting survival analysis in today's world. Procedures and methods that you will learn about include performing model selection and model comparison with the PHSELECT procedure, fitting the Fine and Gray model and fitting Bayesian frailty models with the PHREG procedure, analyzing accelerated failure time models with the LIFETEST procedure, and handling interval-censored data with the ICLIFETEST and ICPHREG procedures. You will see how to model nonproportional hazards with the LIFETEST procedure and the RMSTREG procedure, a procedure available in SAS/STAT 15.1 that models
Using Python With Model Studio for Visual Data Mining and Machine Learning	There are many benefits to using Python with Model Studio that will be explored in this presentation with concrete examples: • Using Python-SWAT with the SAS Code Node. • Makes interacting with SAS Viya (CAS) more approachable to a non-traditional SAS programmer within Model Studio. • Used within a SAS code node for deployable data preparation and machine learning (with auto generated reporting). • Using packages built on top of SWAT, such as DLPy, to be used for deep learning within a SAS code node. • Gives the ability to call Python on an existing open source environment from Model Studio to authenticate and transfer data to and from native Python structures. • Desired Python environment can be used for either data preparation or model building and called by a SAS code node for use/assessment within a pipeline. • Using Python with the Open Source Code Node. • Gives native Python integration for data preparation and model building.

Create Impactful Data Journeys for 'Informavores' and Keep Them Coming Back for More With SAS® Viya	Have you ever thought about what makes one dashboard or infographic more impactful than another? This presentation will provide all you need to take your current information products from huh? to aha!! Creating data applications with SAS Visual Analytics is important to ensure the audience gets immediate and long-term value from your outputs. Competing for the audience's attention today is harder than ever, and the term informavore refers to the insatiable need for information today. We are all informavores. Humans need answers or we start filling the answers in without the correct context or data. Our job as data and business analysts is to create data applications which provide a journey from one infofragment to another. This presentation will step you through creating impactful outputs which resonate with your audience, no matter how data literate they are. SAS Visual Analytics on SAS Viya provides so many options to craft the precise journey for all users in an organisation. You will gain insight on how to leverage these features in SAS Visual Analytics and modernize the way you communicate data stories to your audience. The journey you design for your audience is important to how long they stay and whether they keep coming back to your dashboards and reports in the future. This presentation will provide you with the ideas and skills needed to create and refine your information products to keep Informavores hooked and keep them wanting more tomorrow.
Data Entry in Visual Analytics: Is It Possible?	Achieving data entry within SAS Visual Analytics has been a challenge for many customers. SAS Visual Analytics offers a unique way to achieve it using Data-Driven Content object and SAS jobs on Viya. This session will present the different techniques that can be used to integrate a data entry form into a SAS Visual Analytics report. It will cover the basic principles of data-driven content objects and the different approaches to store the data. At the end of the session, you should be able to create a simple data entry form, insert it within a SAS Visual Analytics report and store the data within CAS for later use.
Designing Dashboards for Multiple Target Audiences With SAS® Visual Analtics	There is no doubt that organizations have a vast amount of data available at their disposal. Yet they often fall into the trap of creating a single dashboard for a wide variety of audiences to derive meaningful insights from the available data. A different set of audience expects different insights from the data. Even the dashboard design thinking differs based on the target audience. This presentation focuses on the three key sets of audiences (executives, middle management, and individual contributors) and how to use SAS Visual Analytics to create dashboards that generate powerful insights for each of these key set of audience. The presentation will also cover dashboard design best practices and recommendations from field consultants to help you weave a compelling story from your organizational data.

Empower and Inspire: Designing Reports for Mobile Experiences	What is the impact of mobile on business intelligence and reporting? According to Gartner, approximately one third of business intelligence users consume reports, dashboards, and KPIs on mobile devices. Since this content is being viewed non-traditional interfaces with less screen real estate, dashboards and reports must be designed to deliver information in an easy and consumable manner. Users expect content to look great regardless of the mobile device screen size, orientation, or functionality. Hence, mobile reports need to be optimized to display data effectively so that users can easily access, interact with, and modify visualizations. SAS Visual Analytics mobile empowers users with reports and dashboards anywhere, and on any device. In this presentation, you will learn design and usability best practices informed by user experience research and cognitive science to help create beautiful reports that guide interaction in SAS Visual Analytics mobile. It will present tips on how to reduce information density with space saving features as well as do's and don'ts for selecting objects, fonts, and colors that allow complex analytics to be processed quickly and create effective reports that scale from your desktop to your mobile device screen.
SAS® Visual Analytics SDK - Embed Visual Analytics Insights in Your Web Pages and Web Apps	Embedding SAS Visual Analytics insights in your web pages and web apps lets you share insights through the portals your users regularly access. You already use SAS Visual Analytics to gain insights through drag-and-drop interactions and rich visualizations of your analytics results. And you share those insights with others to collaborate and solve challenges. The next step is embedding your insights in your corporate portal to increase the number of eyes that see what you see. Welcome to the SAS Visual Analytics SDK! The SAS Visual Analytics SDK is a collection of JavaScript libraries that web developers can use to embed SAS Visual Analytics insights within their web pages and web apps. Add to your web pages and web apps entire SAS Visual Analytics reports or individual objects from your reports. Join this session to learn about the SAS Visual Analytics SDK and see live demos of how easy it is to embed live, interactive SAS Visual Analytics content in your web pages and web apps.

Section 508 and Maps: Breaking Down Barriers for People With Visual Impairments or Blindness	Independent access to maps and geospatial data has always been a systemic barrier for people with visual impairments or blindness (VIB). That barrier inhibits our participation in the classroom, on the job, and within our communities. SAS is working to solve that problem. This presentation defines accessibility as it relates to maps and geospatial data, describes initial support for accessible maps in SAS Graphics Accelerator and explains how you can use SAS 9.4 to create maps that are accessible for everyone including people with VIB.
Smarter and Faster Self-Service Data Preparation	In this presentation, youll learn about the latest and greatest self-service data preparation capabilities of SAS Visual Analytics. You will understand how smart suggestions can help you improve the quality of your data, how the new interface can help you work faster, and how better prepared data can help you build better visualizations, better reports, and tell a more compelling data story.
Smarter and Faster With SAS® Visual Analytics	SAS Visual Analytics is the smartest BI tool available. Automated Explanation, the new name for Automated Analysis, has been rewritten and redesigned to give you smarter and clearer insights, more interactivity, and easier-to-read explanations. In seconds, you can get the analytical story for the business hidden in your data that would take you hours to do manually. On top of that, you can automatically see suggested visualizations and identify related measures. For more advanced analytical visualizations, like decision trees, you get human-friendly natural language descriptions drawing out insights that are easy to digest.

That's the Way I Like It: Personalize Reports in SAS® Apps for iOS, Android, and Windows 10	The report you are viewing on your phone is both beautiful and informative. You can drill, filter, and sort the data, but there's a burning question you need to answer. If only you could make a few modifications to the report, you could gain the insight you are searching for. Viewer Customizations, a collection of capabilities recently introduced in SAS Visual Analytics, puts the power in the hands of report viewers. You can personalize your report viewing experience and answer the questions that used to lie just out of reach. Add filters, groups, ranks. Change data items and visualizations. While viewing your report, you can make decisions more quickly by tailoring the report to your needs – no need to bother the report author with change requests. You can easily change the x-axis variable from revenue to profit, if you like, or filter out regions of the world that are not relevant to your data questions. You can do all of this in SAS Visual Analytics apps, using your preferred platform: iOS, Android, or Windows 10. This presentation includes screen shots and illustrative examples showing how you can interact with your data on your phone, tablet, and laptop to make smart business decisions.
Tips for Building Rich Interaction in Your SAS® Visual Analytics Reports	Your data has a lot to say. How do you make these insights available to your audience? Enhance the report viewing experience by taking advantage of features in SAS Visual Analytics to build reports that engage your audience in exploration. This presentation highlights features including automated analytical objects, object interactions, drilling hierarchies, as well as report and page controls. The presentation also describes techniques to make the most out of these features. With these tips, you can create an interactive report that helps you and your audience dig deeper into the data to gain insights.
10 Minutes to Your First Hello World – Rest APIs	Like many other software applications, your time to first hello world (TtFHW) with the SAS Viya Rest APIs should be seamless and simple. The goal of this Jupyter style playbook that works OotB in Viya will be to demonstrate a sample playbook with a standard workflow. Then, once you have used the playbook, youll be enabled to envision how you can extend the playbook for your use case(s). The playbook uses standard Python modules to connect to the SAS Viya Rest APIs. The playbook is designed with easy to read variable declarations and helper functions for ease of use. The GitHub project includes all dependencies and is designed to work with SAS Viya 3.4 (and will be upgraded as needed to work with 3.5).

20-in-20: Quick Tips for SAS® Enterprise Guide® Users	There are many time-saving and headache-saving tips and tricks you can use to make working in SAS Enterprise Guide a breeze. Did you know that you can create a Process Flow from a program with the click of a button? You will learn 20 tips and tricks for working in SAS Enterprise Guide in 20 minutes – including some tips for the latest release, SAS Enterprise Guide 8.1. One tip per minute, and out of the 20 you are guaranteed to find at least one nugget that will make your life easier.
Accelerate DATA Step BY-Group Processing in SAS® Viya®	BY-group processing is a method of processing observations from one or more data sets so that the observations are grouped by common variable values. Cloud Analytics Services (CAS) in SAS Viya enables you to code your DATA steps such that BY-groups are operated on in parallel. Parallel processing can improve performance. In this presentation, see how to combine tables in CAS with the DATA step SET and MERGE statements. Also, learn how to use FIRST. and LAST. variables in the context of CAS to perform operations at the start or end of a BY group. We also cover issues you may run into as you convert your SAS®9 DATA steps to run in CAS. Come see how to accelerate your DATA steps in CAS.
Best Practices for Converting SAS® Code to Leverage CAS	This is an introductory presentation to help you understand how to convert SAS code to leverage SAS Cloud Analytic Services (CAS), the distributed computing engine in SAS Viya. As customers adopt SAS Viya they have access to many new visual interfaces, procedures and CAS action sets that execute code in CAS. But what about existing SAS routines? How does one convert these routines to leverage CAS? In this session we will cover terminology, CAS's sweet spot, the biggest SAS®9 gotchas (issues) in conversion of SAS code to SAS Viya CAS, steps one-two-three (best practice in doing the conversion), workarounds, case studies, coding examples and reading material. Additionally, you will learn how to engage with SAS to run your SAS code through the SAS Viya Readiness Assessment Utility, which produces reports to assist you in your conversion of SAS code to leverage CAS.

Building an Expert's Toolbox: Essential Tools for Generating the Perfect Microsoft Excel Worksheet	When you have a home building or renovation project to accomplish, you need expert tools for the job. The same is true when you want to build (create) or modify (renovate) Microsoft Excel worksheets. You need a variety of expert tools in your SAS software toolbox to accomplish these tasks. You have a choice of many tools that enable you to create and fully customize your worksheets. For example, you can use the SAS Output Delivery System (ODS) Excel destination and the SAS EXPORT procedure. But you can also complement the standard tools with more specialized ones (for example, SAS macros and the Python open-source language) to further extend the capabilities of your worksheets. This presentation explains how to use all of these tools to create fully functional Microsoft Excel worksheets. The discussion is divided into two main sections. The first section explains how to generate Excel worksheets and perform various tasks in SAS and SAS Viya by using current functionality (for example, the ODS Excel destination). Then the presentation demonstrates how you can extend the functionality for that task by using tools such as custom SAS macros that generate scripts. The second section illustrates how you can further extend worksheet functionality in all environments by using open-source tools (for example, Python and Java) and techniques.
Common Tasks Done With CASL	Some tasks are so common they are used in almost every program: tasks such as loading data tables and then either deleting or saving those tables. Other tasks include looping through the data, summarizing the data, and sorting the data. As a SAS programmer, you know the code that you need to accomplish these common tasks. CASL, the language created to communicate with the SAS Cloud Analytic Services (CAS) server, might be new to you. This presentation demonstrates how to perform those common tasks with CASL. Understanding how to perform common tasks and having the code to do them, empowers you to develop CASL programs and take full advantage of the CAS server.

Creating Custom Microsoft Excel Workbooks Using ODS: Part One	This presentation explains how to use Base SAS®9 software to create custom multi-sheet Microsoft Excel workbooks. You learn step-by-step techniques for quickly and easily creating attractive multi-sheet Excel workbooks that contain your SAS output using the ODS Report Writing Interface and the ODS EXCEL destination. The techniques can be used regardless of the platform on which SAS software is installed. You can even use them on a mainframe! Creating and delivering your workbooks on-demand and in real time using SAS server technology is discussed. Although the title is similar to previous presentations by this author, this presentation contains new and revised material not previously presented.
Creating Reports That Comply With Section 508 Using SAS® 9.4: Planning Is the Most Important Step	When reports need to meet Section 508 and other accessibility compliance requirements, those needs are often only addressed in the last stages of creating and designing reports. At that point in the process decisions have already been made that either limit the ability to make reports accessible or require significant revisions to output that has already been designed and generated. The result is a report that either does not fully meet accessibility requirements or requires a significant investment in additional resources to fix the problem. This session will detail the issues report authors need to consider before they write their first line of code when planning for how they will create and deliver their report. This includes the technologies they choose to use (i.e., HTML vs. PDF vs. Excel), the way data is presented in both tabular and graph form, and what technologies and techniques are available in the Output Delivery System (ODS) of SAS 9.4M6 to achieve these goals. The end result is that the often tedious act of remediating for accessibility turns into an easy task that emerges naturally as you create reports.

Customize Your Table of Contents With ODS WORD	The Base SAS Output Delivery System (ODS) destination for Word enables customers to deliver SAS reports as native Microsoft Word documents. ODS WORD generates reports in the Office Open XML Document (.docx) format, which has been standard in Microsoft Word since 2007. The .docx format uses ZIP compression, which makes for a smaller storage footprint and speedier downloading. ODS WORD is preproduction in the sixth maintenance release of SAS 9.4. This presentation shows you how to make a custom table of contents (TOC) with ODS WORD. You will learn how to control the placement, text, and style of your TOC. Place your TOC anywhere in the body of your Microsoft Word document. Make your TOC title and entry text anything you want it to be. Assign custom colors or fonts to your TOC text. Even put a stylish border around your TOC if you like! Adding a TOC to your document makes it more navigable, whether it is in digital or hard copy format. Adding a custom TOC makes your document smarter, which makes you look smarter too! Whatever your SAS programming level may be, you will benefit from this session
Git for the SAS® Programmer – Using Source Control to Organize Your Code and Collaborate With Others	Are you tired of using elaborate comments in your code or saving multiple copies of your files to manage changes as you make them? Wish you could go back in time to that version of your program that worked? Do you live in terror of clobbering someone else's work? Source control can help, and the front runner in the source control world is Git. Git is a widely used source control system that you can use on your own or in collaboration with others. It can also be used with a central, shared repository such as GitHub or Bitbucket. Learn Git concepts such as clone, commit, and merge and how to do them using the Git interfaces in SAS Studio and SAS Enterprise Guide or in code using SAS functions.
REST Just Got Easy With SAS And PROC HTTP	Hypertext Transfer Protocol (HTTP) is the lifeblood of the web. It is used every time you upload a photo, refresh a web page, and in most every modern application you use today from your phone to your TV. A big reason why HTTP has become so ubiquitous with modern technology is because of a software architectural style known as Representational State Transfer (REST). REST has become the standard for interacting with independent systems across the web, which means that the consumption of REST APIs is, or is going to be, mandatory. The HTTP Procedure in SAS has enabled developers to use REST APIs simply and securely for many years now, but the demands of current systems keep increasing. PROC HTTP has been give quite a few updates to make using this great procedure even easier than it ever was before.

SAS and Microsoft Office 365: A Programming Approach to Integration	Many of us are now using cloud-based productivity tools like Microsoft Office 365. And some of us are using SAS software in the cloud too. For those of us who use SAS to read and create Microsoft Excel documents, cloud-based files can add an extra wrinkle when we automate the process. It also adds some exciting possibilities! The Microsoft Office 365 suite offers APIs to discover, fetch, and update our documents using code. In this presentation, I'll show you how to use SAS programs to reach into your Microsoft OneDrive cloud to read and update your files. And I'll show you how to leverage the collaborative features of Microsoft Teams to publish useful updates to your colleagues and yourself. The approach relies on the REST APIs in Microsoft Office 365 and PROC HTTP in SAS. The presentation covers each step, including: • Registering a new application in your Microsoft Office 365 account. • Authentication and access using OAuth2. • Querying your document folders and downloading files (to read into SAS). • Creating new documents (with SAS) and adding them to your folders. • Sending rich messages to your teammates in Microsoft Teams. In addition to the detailed steps, this presentation references a GitHub repository with code that you can adapt for your own use.
SAS® Studio Custom Tasks: Tips and Tricks for the Adventurous Task Author	SAS Studio provides built-in point-and-click tasks for generating and executing complex SAS code. SAS Studio also enables users to embark on the journey of creating their own interface for their own SAS code, known as a Custom Task. Building a Custom Task is easier than you might think. There are great resources available for getting started writing Custom Tasks including: SAS Communities articles, GitHub examples, free e-learning, and previous SAS Global Forum presentations. But what about those adventurous task authors who have progressed out of the getting started phase? This presentation will focus on more daring Custom Task concepts that aren't covered in introductory material. For example, writing the optional requirements and dependencies sections, creating a multi-step (multi-task) work flow, incorporating Apache Velocity Template Language code beyond the #foreach, and working with CAS tables. Join me on this quest to create advanced Custom Tasks that push the limits and incorporate the features provided by SAS Studio and Apache Velocity Template Language.

Teaching SAS Coding With Self-Checking Exercises	Programming is an essential skill for many people and most STEM jobs. Teaching students to code is a standard part of statistics and computer science curriculum. In my opinion, students need individual hands-on practice to master the skill of writing code regardless of the programming language. Classroom lectures help explain concepts and design patterns, but they cannot substitute for students spending time practicing. Designing meaningful practice with timely feedback is difficult for faculty. Manual grading is either non-specific or has a significant lag between assignment completion and student feedback. In this presentation, I'll outline how professors can teach SAS using SAS Analytics Cloud with self-grading assignments to help the students get immediate feedback on programming exercises. This case study leverages SAS Analytics Cloud and Jupyter Notebooks along with the SAS Kernel and NBGrader.
The History and Evolution of SASPy, Including an Overview of What It Can Do and How to Use It	SASPy is one of SAS' most popular open source packages, available on the SAS Github site (https://github.com/sassoftware/saspy) and also installable via PyPI and Anaconda. But, how did it come to be? How and why did SAS create an open source Python interface to your existing SAS 9.4 systems, and without even needing any updates to your existing SAS servers for it to be able to connect to them? Often having an understanding of the design criteria, and constraints, of a software package helps you better understand and utilize it, so you can be more productive in what you are really trying to accomplish. This session will try to blend in this insight while giving an overview of SASPy, including the various ways it can connect to your different SAS installations, how to configure it for each, a walkthrough of the core functionality, and a look at some of the more advanced features. The goal is that you end up with a much better understanding of how to use SASPy to accomplish even better combined Python and SAS workflows for your projects.

Using the Job Execution Web Server to Build Custom Web Applications in Viya®.	In prior versions of SAS, an often overlooked capability was using SAS Stored Processes to stream HTML content and essentially create full-blow web applications that took take advantage of the SAS platform. Using a combination of HTML, CSS, JavaScript and SAS code, the possibilities were endless. From workflow to data entry to geographic mapping applications, if you could envision it you could probably build it with Stored Processes. With the introduction of Viya, the concept of Stored Processes was initially sunset. Thankfully, the SAS Job Execution Web Server allows many of the same custom application development functionality that Stored Processes did, while allowing you to leverage the full power of the Viya platform. Whether you're familiar with the old Stored Process based approach or not, this breakout session will show you the easiest ways to leverage SAS and HTML with the Job Execution Application. The agenda includes: • What is a Viya Job? • How to create and register a job. • How to associate a form with a job for parameter selection. • Incorporating HTML into your job. • Creating a full-blown web application using Jobs.
Visualizing Geographical Data With a Tile Grid Map in SAS®	The tile grid map is an increasingly popular tool to visualize statistical data, such as the US population change by state, on a map. It mimics an actual map with a set of equal squares in a rectangular grid. For example, you can make a tile grid map of the United States with each square representing an individual state. Unlike the choropleth map, the tile grid map does not show the perception bias that favors larger regions. Furthermore, the squares are well-suited for laying out rubber stamp graphs with subsetted data to create map-based small multiples. You can use the small multiples to effectively compare and analyze data in different regions of the map. Although the Graph Template Language (GTL) does not directly support this visualization, you can easily make one in SAS with a combination of the DATA step, PROC SQL, PROC SUMMARY, and the SG procedures. This presentation uses examples to show you how to systematically create a variety of tile grid maps that include time series and infographics.
Explanatory Machine Learning Model Plots for Epidemiological and Real-World Evidence Studies	For real-world evidence and epidemiological studies, comparative effectiveness research (CER) provides actionable information for drug regulatory and health care decision-making. CER relies on white-box statistical and machine learning (ML) models for estimating treatment effect and drug safety evaluation. Black-box ML models are also incredibly powerful for generating better predictions but how to interpret the model results is not straightforward. How should ML model results be presented to regulators to assure them that the results are accurate, fair and unbiased? How should ML model findings be presented to end-users to overcome the stigma of black-box model

	bias? We provide a standardized interpretability plots framework for evaluating and explaining patient-level ML models using observational healthcare data. The presentation shows how to use SAS CAS action sets and model-agnostic interpretability tools available in SAS Visual Data Mining and Machine Learning to explain the functional relationship between model features and target outcome variable. In addition to using the partial dependence and individual conditional expectation plots, we present some RWE use cases and example code to demonstrate how different plots that represent time-varying and non-time-dependent variables interaction, cohort-period-feature effect, gender-age group stratification, beneficial and untoward effects of drug exposure, drug-disease interactions, and confounding-by-indication effect may be used to explain ML model results.
Modernizing Credit Risk Analytics: From Risk Management for Banking Into Stress Testing	Due to the continuous evolution of regulations issued around the world and the constant advancements in the methodology, the analysis of credit risk is a complex topic which requires tools to be updated during development, implantation and even during the evaluation phase itself. These tools need to be tailored to the specific needs of a variety of financial institutions, and yet they need to leverage a common platform containing common components needed for the analysis. SAS Solution Content for Stress Testing is a powerful and highly customizable environment where several quantities of interests (expected credit loss, risk weighted asset, economic capital and more) can be evaluated. This presentation presents some of the details regarding the evolution of credit risk analytics from SAS Risk Management for Banking into SAS Solution Content for Stress Testing.
The Seven Most Popular Machine Learning Algorithms for Online Fraud Detection and Their Use in SAS®	Today illegal activities regarding online financial transactions have become increasingly complex and borderless, resulting in huge financial losses for both customers and organizations. Many techniques have been proposed for fraud prevention and detection in the online environment. All these techniques have the same goal of identifying and combating fraudulent online transactions, however, each machine learning technique comes with its own characteristics, advantages, and disadvantages. This session will review the use of the most common machine learning algorithms used in online fraud detection, the strengths and weaknesses of these techniques, and how these algorithms are developed and deployed in SAS. Types of fraud discussed will include credit card fraud, financial fraud, and e-commerce fraud. Algorithms reviewed will include neural networks, decision trees, support vector machines, K-nearest neighbor, logistic regression, random forest, and naive Bayes.

The Increasing Use of Artificial Intelligence in the Intelligence Community	The management of intelligence data within a law enforcement environment has traditionally been a very manual process. Reviewing the contents of intelligence reports and creating structured records has traditionally been the responsibility of intelligence professionals. With the massive increase in the amount of data being processed and the advancements in technology, the intelligence community is increasingly turning to artificial intelligence to help automate some of the tasks. This presentation will discuss some of the areas of progress and some of the challenges being faced.
Best Practices When Moving SAS® to Microsoft Azure	The best practices that will be presented are lessons learned from SAS customers who have moved to Microsoft Azure. All of these practices are being placed in a single location to share with other SAS customers looking to move their SAS applications to Microsoft Azure.
Accelerate Your Migration to SAS® Viya®	Designed just for SAS®9 users, the new SAS®9 content assessment is a set of applications to help you understand what's in your SAS®9 world. Easily identify key details and insight so you can plan your migration to SAS Viya. Leverage SAS' proven global migration framework: a step-by-step methodology for planning and executing the best strategy to migrate to SAS Viya. Join us during this presentation, and we'll show you each application, highlighting key findings from your SAS®9 system so you can plan your migration to SAS Viya..
Migrating to SAS® Studio on SAS® Viya®	Have you been using SAS® Enterprise Guide® or SAS Data Integration Studio and ready to move to the cloud? SAS Studio, our cloud-native interactive development environment, will be your destination. We'll show you how to get started and share what we are planning next.

Anomaly and Degradation Detection Using Subspace Tracking in Streaming Data	In our increasingly connected digital world, many sensors are connected to each other. Each sensor provides several features and data from those features. As a result, the data sets created from Internet of Things (IoT) applications can consist of hundreds or even thousands of dimensions. Even though the dimensionality is high in these data sets, the actual rank is mostly low because of the high correlations between these dimensions. As a result, subspace analysis and subspace tracking are useful methods of capturing low-dimensional structures from high-frequency, high-dimensional data. In streaming data, a substantial change in the subspace can indicate an anomaly. This session will introduce several measures for detecting changes in the subspace that we use in our anomaly and degradation detection methods. We also present the results of applying our methods to simulated and real-world data sets. These methods have been implemented in an event stream processing platform.
Diving into Data with SAS® Visual Analytics in SAS® Viya®	New to SAS Visual Analytics? Just received a new data source? Not sure where to begin? This video introduction to SAS Visual Analytics 8.5 in SAS Viya highlights its extremely attractive and intuitive point-and-click, drag-and-drop user interface, showcasing how easy and fun it is to use. In just over an hour, we'll have you diving into your data, uncovering its hidden patterns, trends and relationships, laying bare your data's secrets. We'll begin with a survey of our example data's properties and classification roles. We'll generate instant statistics, create a new calculated data item, and filter our data. We'll create a colorful report with a crosstab, pie chart and word cloud. Finally, we'll add a button bar, drop-down list and slider to interactively and dynamically filter our report: fun, fast and easy with SAS Visual Analytics!
An Introduction to Reinforcement Learning in SAS® Viya®	This session will provide an overview of reinforcement learning (RL) and an update of the current capabilities and a road map for RL in SAS Visual Data Mining and Machine Learning. Practical applications of RL will be presented to demonstrate the types of business problems that can be addressed with this novel approach to prediction and decision making.

Explore, Share, Tell the Story With SAS® Visual Analytics	Let SAS® Visual Analytics take you on a data journey. Starting with smart, flexible techniques that offer guidance as you explore your data, automated analytics point out insights leading you to more in-depth discoveries. Make it easy for others to see what you see by sharing insights where your customers spend their time: on the websites they normally visit, in Microsoft 365 applications and on their mobile devices. Finally, amplify your insights by broadcasting your data story to thousands of users without worrying about affecting your SAS® Viya® environment.
Causal Analysis Using SAS® Statistics Procedures	This talk overviews some recently developed SAS procedures that provide statistical tools for causal analysis, including causal effect estimation, causal mediation analysis and causal graph theory for establishing valid estimation strategies.
Connecting the Dots between SAS® Viya® Products	We know that SAS Viya has a variety of applications available. But have you ever wondered how some of them work together to take your data from being rows and columns into understandable results? This presentation explores SAS Viya applications like SAS Drive, SAS Data Explorer, SAS Data Studio, SAS Studio and SAS Visual Analytics from both a programmer's and a non-programmer's perspective. See how to load data into memory, perform some data cleanup, create a small report, and collaborate on these results with colleagues.
SAS® Viya® 3.5 and SAS® Viya® 4: A Side-by-Side Comparison	re you interested in learning more about SAS Viya 4 administration, architecture and deployment? Curious about how the new features and technologies of SAS Viya 4 compare to SAS Viya 3.5?
Making Text Analytics More Approachable	Text Analytics proves most effective when it is approachable to business users, packaged within easily deployable and accessible applications, and helps you make better and effective decisions at scale. Core text analytics capabilities, including those offered by SAS , help analysts and data scientists categorize documents, extract information, discover topics and identify sentiment. In this paper, we offer a selection of applications built over these core capabilities, each of which help you obtain answers to questions that motivate you as a business users of AI, and enable you to receive recommendations, gain insight, and make decisions. Our hope is that these applications serve to expand your understanding of the applicability of text analytics capabilities, and the value it brings to your organization.

Physical Distancing and Crowd Density Monitoring Using Computer Vision	A big part of COVID-19 response centers around the safe return of employees and customers in public spaces such as shops, plants, airports, cafes, etc. This requires ongoing needs to monitor compliance with physical distancing and crowding guidelines. Since a lot of public spaces already employ security cameras, we can use computer vision to monitor physical distancing in a noninvasive, anonymized manner targeted toward well-defined spaces. We have built a robust, end-to-end pipeline by combining object detection and tracking against camera feeds with simple configuration. This pipeline can support real-time alerts for urgent situations and post-facto analysis for assessing overall effectiveness based on location/day of week/time of day. This solution uses novel features to map physical distance to pixel distance and attach "persistent" conditions to alert condition to avoid false positives.
SAS® Connectivity in the Cloud	Explore the variety of options available to connect to data sources such as Azure Synapse Analytics, Spark, Cloudera Data Platform on Azure, Google BigQuery, Yellowbrick and many more. Also learn about support for diverse run-time environments, including SAS, Hadoop, Spark, SAS analytics, cloud and data virtualization.
What's New in SAS® Data Management	SAS continues to enhance its data management functionality to provide a comprehensive and integrated set of capabilities for collecting, transforming and managing your data. New features include enhanced capabilities for working with data from a wide variety of environments and types, including Hadoop, cloud environments, RDBMS, files, unstructured data, streaming and others. There are new automation and discovery enhancements, as well as new support for building flows and cataloging assets to understand the context and governance of useful data in an enterprise.
Switching Things Up With the TRANSPOSE Procedure	What do you do when the arrangement of your data is not ideal for your analytical goals? Maybe you need to create summarized reports or graphs, but the data in its current form does not allow it. How can you reorganize your tables to accomplish these tasks? With the underused TRANSPOSE procedure, you can easily restructure tables to visualize your data in a whole new way. In this video, we explore this valuable PROC step to take full advantage of the power of SAS.
What's New in SAS® Visual Analytics 2021	Learn about key new features in SAS Visual Analytics. New features have been added to enhance the presentation of insights, tool interactivity and reporting flexibility. These features include data view enhancements, improvements in gauge objects, and the new report review feature that will allow authors to evaluate their report as they are creating it!

Hyperautomation With SAS® Decisioning and Microsoft Power Automate	With the newly added SAS Decisioning connector for the Microsoft Power Platform, customers can now develop world-class decision services in SAS. This session gives a quick overview of the Microsoft Power Platform products, including Power Automate and Power Apps. There will be a demo that illustrates how SAS analytics are consumed through decisions in a mobile app built with Power Apps. We will also walk you through the steps to configure the SAS Decisioning connector for the Power Platform, and the container-based deployment approaches for SAS decisions and analytics.
Modern Econometrics Methods	This session overviews recent additions to SAS® Econometrics and demonstrates several examples of the new Frontier procedure for the analysis of stochastic frontier production or cost models, new sequential Monte Carlo methods for nonlinear non-Gaussian state space models, and a new data access engine to retrieve data from the Bureau of Economic Analysis databases.
Faculty Session: What's New in SAS® Academic Programs	Join us to learn about our latest software offerings for academics, including enhancements to SAS® Viya® for Learners. We will also share updates about exciting new resources to support teaching and learning SAS.
Interactive Modeling in SAS® Visual Forecasting	SAS Visual Forecasting provides large-scale automatic model generation, independent variable and event selection, parameter optimization, champion model selection from a set of candidate models, and forecast generation. Occasionally, you may want to analyze a single time series in more detail or replace the system-selected champion model with another model. Interactive modeling is a key modeling capability that provides the forecaster with the tools to assess and evaluate models. Core functionality includes the ability to visualize model diagnostics, visually compare models and replace the champion model with another model. Please join us in this session for a demonstration of this new capability.

The Human-Machine Relationship in End-to-End Machine Learning	Automated machine learning, or AutoML as it is commonly known, is often promoted as a panacea for reaping the benefits of powerful analytical techniques without the requisite knowledge or experience. In the extreme, it is represented as an "easy" button; just provide the data and formulate your problem, and it will deliver models to use for making decisions. In reality, automation is used most effectively to augment, not replace, the manual activities and decisions throughout the analytics life cycle, allowing more time for creative exploration and reflection on the results and insights gained. In this session, you will see how the SAS® Viya® end-to-end analytics environment provides a natural and effective balance of automation and human interaction capabilities, with particular focus on SAS Visual Machine Learning.
SAS Certification Overview: What's New in 2021	Interested in adding a SAS credential to your resume? Already hold a SAS credential and want to find out what's next for you? Join us for an overview of the SAS certification program and find out what's new in 2021.
The Power of SAS SQL	PROC SQL is a powerful language that can express many of your queries simply and with clarity. In this presentation, you learn to maximize human and computing efficiency with multiple SQL techniques. The instructor has collected many best practices from helping customers with real-world business problems after teaching SAS for more than 10 years to thousands of learners. Throughout the session, you learn efficiency tips to help improve performance. Users who are continuously improving processes and looking for PROC SQL efficiencies to analyze and process data will benefit from this session
SAS Studio 3.8 Visual Programming	SAS Studio 3.8 offers many exciting features. This video introduces the visual programming perspective in SAS Studio 3.8. Learn how to construct a visual, repeatable, process flow that consists of code, tasks and queries. Whether you are an expert or novice SAS user, you will learn a visual approach to programming, using tasks and acquiring tips along the way.
SAS Procedure Output: Using Formats With ODS Style Options to Produce a Trafficlighting Effect	The presentation demonstrates a powerful but lesser-known programming technique that uses formats and ODS style options with the commonly used SAS PRINT procedure to add highlights to SAS report output.

Visualizing Your Data with SG Procedures	Representing your data in graphical form is a great method for communicating information. By using the SG procedures of ODS Graphics, you can easily create a wide variety of standard graphs. This presentation explores the PROC SGPLOT step for producing simple to advanced single-cell graphs. Also, the capabilities of the SGSCATTER, SGPANEL, SGPIE and SGMAP procedures are demonstrated.
The Power of SAS SQL	PROC SQL is a powerful language that can express many of your queries simply and with clarity. In this presentation, you learn to maximize human and computing efficiency with multiple SQL techniques. The instructor has collected many best practices from helping customers with real-world business problems after teaching SAS for more than 10 years to thousands of learners. Throughout the session, you learn efficiency tips to help improve performance. Users who are continuously improving processes and looking for PROC SQL efficiencies to analyze and process data will benefit from this session.
It's All About the Base – Procedures: Part Two	Its All About the Base – Procedures (a SAS Global Forum 2019 presentation) explored the strengths and challenges of commonly used Base SAS procedures. It also compared each procedure to others that could accomplish similar tasks. This presentation takes the comparison further, focusing on the FREQ, MEANS, TABULATE, REPORT, PRINT, and SQL procedures. As a programmer, whether novice or advanced, it is helpful to know when to choose which procedure. The first presentation provided best-use cases, and this presentation takes it a step further in its discussion of when to choose one procedure over another. It also provides example code to demonstrate how to get the most out of the procedure that you choose.
ODS: It's Not Just for Tables Anymore – Using Formatted Text and Lists in Your Reports	You're used to seeing tables in your ODS reports, but maybe you need that extra something to drive your results home. Did you know that you can add formatted text and lists to your report? With PROC ODSLIST and PROC ODSTEXT, you can add richer descriptions to your reports, or even generate data-driven lists and blocks of text. The examples in this presentation demonstrate several ways to display your output. Whether you need to create a form letter or an infographic, PROC ODSLIST and PROC ODSTEXT can help you generate the report that you want.

Pies and Donuts: A New SG Procedure Desert!	needed to use the Graph Template Language (GTL) to create this display in the ODS Graphics system; but now, with PROC SGPIE, pie and donut charts are a piece of cake to create! This presentation will focus not only on the features of this new procedure, but also on the effective use of pie charts in general.
Let's Start Something New! A Beginner's Guide to Programming in the SAS® CAS Environment	Starting something new (whether it is a home project or a work project) is not always the easiest thing to do. However, more often than not, starting something new can be very rewarding. So, while you might be a little hesitant to start programming with SAS Cloud Analytic Services (CAS), you will likely find it extremely beneficial! CAS is a server that provides a cloud-based, run-time environment for analytics and data management. The server can run as a distributed server on multiple machines with multithreaded processing, which means that it can perform high-performance analytics on very large tables.The purpose of this presentation is to help you take that first step toward programming with CAS. This presentation provides a complete example of programming in the CAS environment, from showing you how to establish a CAS session to running one of the many high-performance procedures that are available in CAS. The discussion also covers other details that you need in order to start programming in CAS, including everything from loading files into CAS to manipulating the data with the SAS DATA step. The presentation also discusses the CAS and CASUTIL procedures. PROC CAS (the procedural interface to the CAS server) uses the new CASL language that enables you to perform actions on the CAS server. So get ready to take that first step and start something new!