Participants Guide

SAS Hackathon Boot camp – Trustworthy AI Challenge

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Participants Guide

Preamble: Congratulations on starting your first day as a Loan Approval Manager at iLink Mortgage Brokers, Inc.! You were hired, in no small part, because of your analytics "hacking" skills and your keen ability to reduce statistical bias in the mortgage loan approval process.

You inherit data and a series of code and output from your predecessor. As you know, our company recently received negative publicity from the press because we were not properly accounting for historical discrimination in our loan approval models.

Your Day 1 goal is to build upon - and help us refine - our existing credit approval models created by your predecessor to (1) better identify where bias can occur and (2) help us reduce this bias so credit is being approved on true risk factors - not historical stereotypes.

READ!

- You need to prepare/create a SAS Profile to access the cloud environment, due date 13th April.
- You will be assigned to team in Vegas.
- 4 table seatings, the table is your Team
- Link to cloud environment assigned in Las Vegas
- 3 Tracks/Challenges available

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Participants Guide – What and How?

Track 1: One dashboard at a Time: Ethical Data Visualization Challenge	Track 2: Reducing Bias in Credit Approval Modeling Data	Track 3: Exploring Predictive Models
What: Preliminary Data Analysis How: SAS Visual Analytics (VA)	What: More Advanced Track using Predictive Modeling and Machine Learning tools How: SAS VA, SAS Model Studio, SAS Studio, Open-Source in Jupyter	What: More Advanced Track using Predictive Modeling and Machine Learning tools How: SAS Viya Workbench
Understanding the Problem		
The materials you inherit from your predecessor contain several sources of bias. Evaluate the data and output to describe important sources of: (1) Data Bias and (2) Modeling Bias	The materials you inherit from your predecessor contain several sources of bias. Evaluate the data and output to describe important sources of: (1) Data Bias and (2) Modeling Bias	Flex Your Data Science Muscles! How quickly can you make sense of the data to create and compare predictive models? (Primary Goal) With the provided data, what type of predictive model would you build and why? (Extra Challenge #1) What was your sequence of data prep steps (if any)? What programmatic visualizations (e.g., matplotlib or ODS) would help you make better sense of the data?
Whys to Address Bias		
There are several steps you could take to create a more equitable credit approval process. Please share how you could - or did - address modeling bias through: (1) Visualizing concerning variables (2) Pre-processing variables to minimize bias (3) Other bias mitigation strategies	There are several steps you could take to create a more equitable credit approval process. Please share how you could - or did - address modeling bias through: (1) Pre-processing variables to minimize bias (2) Model Development (3) Other bias mitigation strategies	There are several steps you could take to create a more equitable credit approval process. Please share how you could - or did - address bias, while focusing on the following questions: (Extra Challenge #2) Evaluate the data and output to describe important sources of data bias & modeling bias. Hint: use Fair Learn python package
Communicating your findings		
Wrapping up: (1) which sources of bias are most troublesome in the analysis? (2) What are your recommended next steps in the analysis?	(1) Describe how you model compared to the champion model from your predecessor. Did you beat the selection statistic from your predecessor's champion model? (2) How do you think about the tradeoff between model accuracy and perpetuating bias in the credit approval process?	(Primary Goal) If you built a predictive model, tell us about your findings. How did you select your variables? What tools did you use? (Extra Challenge #1) If you decided to build a series of visuals with open-source tools or SAS Data Step & ODS, what insights did you uncover? (Extra Challenge #2) How do you think about the tradeoff between model accuracy and perpetuating bias in the credit approval process? What tools did you use?

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Data Dictionary and other helpful resources

Variable	Label
bad	Current on loan payments (0), defaulted on the loan or seriously delinquent (1)
birth_date	Date of birth of the customer
clage	Age of oldest credit line in months
clno	Number of credit lines
debtinc	Debt to income ratio
defaulted	Lorem ipsum dolor sit amet
delinq	Number of delinquent credit lines
derog	Number of major derogatory reports
favoriteMovie2023	The customers favorite movie in 2023
gender	Gender of the customer: female (0) or male (1)
job	Occupational category
loan	Requested loan amount
mortdue	Amount due on existing mortgage
name	Surname of the customer
ninq	Number of recent credit inquiries
reason	Home improvement (HomeImp) or debt consolidation (DebtCon)
usState	US State of residency the customer
value	Value of current property
yoj	Years at present job

Helpful Resources

SAS Hackathon Enablement Hub
https://learn.sas.com/course/view.php?id=6506

SAS Viya Quick Start Videos
https://video.sas.com/category/videos/sas-viya-quick-start

Trustworthy AI Features in SAS Videos
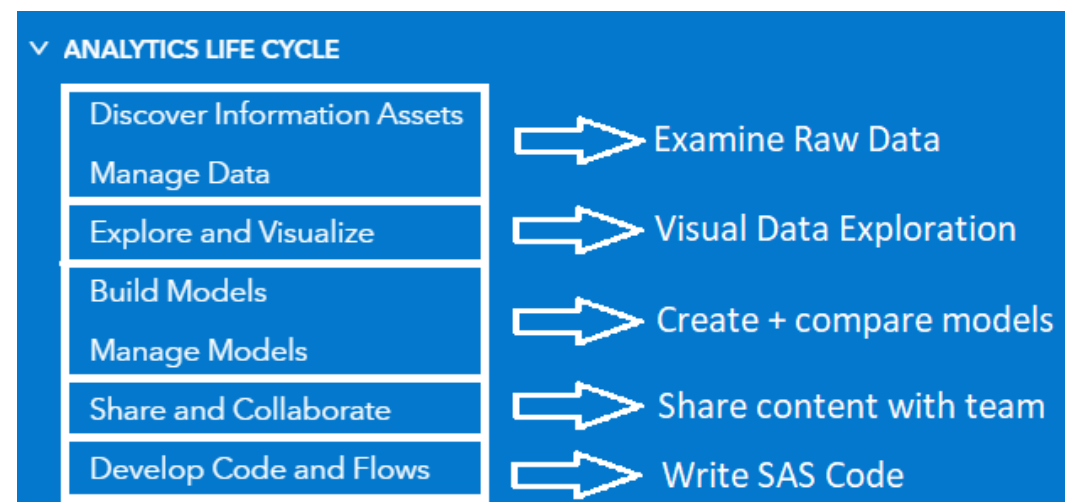https://video.sas.com/category/videos/trustworthy-ai

Your *Bias Detection Tools* Folder: See example code in action!
Assess_Bias_Credit_Lending.sas + Mitigate_Bias_Credit_Lending.sas

Resources left by your predecessor:

- **SAS Visual Analytics Dashboard (start here):** Home Mortgage Defaults – VA Report

- **SAS Model Studio Project:** Mortgage Analysis – SAS Model Studio

- **SAS Program in SAS Studio:** Mortgage Data Analysis – Supervised Learning Model

- **Python (or SAS) Program in VSCode or Jupyter & SAS Viya Workbench:** Mortgage Data Analysis

ANALYTICS LIFE CYCLE

Discover Information Assets / Manage Data	⇒ Examine Raw Data
Explore and Visualize	⇒ Visual Data Exploration
Build Models / Manage Models	⇒ Create + compare models
Share and Collaborate	⇒ Share content with team
Develop Code and Flows	⇒ Write SAS Code

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Participants Guide – Deliver your Team Results

OBS Session 1 Track Links!

Track 1: One dashboard at a Time: Ethical Data Visualization Challenge	Track 2: Reducing Bias in Credit Approval Modeling Data	Track 3: Exploring Predictive Models
Session 1: end date/time: April 16 at 3:30 pm. Links to deliver results		
(Session 1 /Track 1) No Code/Low Code: https://forms.office.com/r/DdTvmYMxCj	(Session 1 /Track 2) Coding: •https://forms.office.com/r/7yxPxZZ1XV	(Session 1 /Track 3) Workbench: https://forms.office.com/r/MJFkGxJtg7

In addition to the form, send:

Mail to: Christine@Brown@sas.com
Subject line: SAS Hackathon Boot camp /#Session 1 #Track-X #Your team-ID,

Include /attach proof of performance, like screen dumps etc.

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Participants Guide – Deliver your Team Results

OBS Session 2 Track Links!

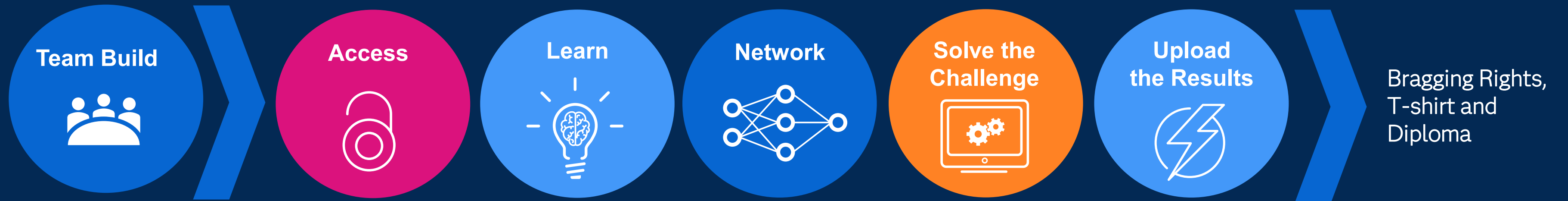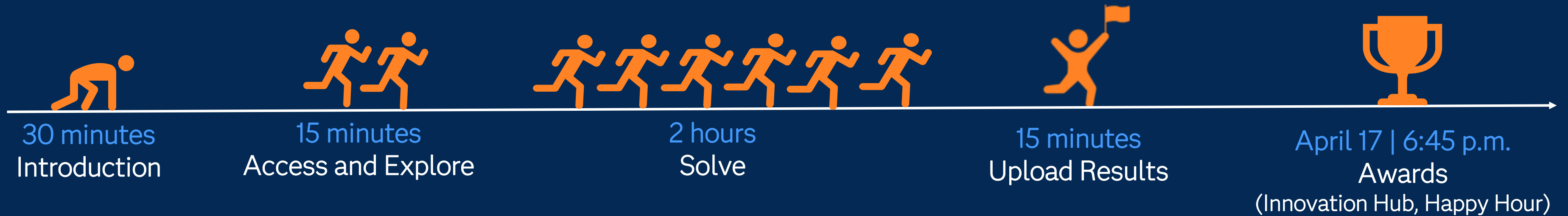| Track 1: One dashboard at a Time: Ethical Data Visualization Challenge	Track 2: Reducing Bias in Credit Approval Modeling Data	Track 3: Exploring Predictive Models
Session 2: end date/time: April 16 at 6:45 pm. Links to deliver results		
(Session 2 /Track 1) No Code/Low Code: https://forms.office.com/r/s8vDnEUS4F	(Session 2 /Track 2) Coding: •https://forms.office.com/r/dfdSyHDDAB	(Session 2 /Track 3) Workbench: https://forms.office.com/r/QWTeY52sBt

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3-Hour Race From Start to Finish

30 minutes
Introduction

15 minutes
Access and Explore

2 hours
Solve

15 minutes
Upload Results

April 17 | 6:45 p.m.
Awards
(Innovation Hub, Happy Hour)

Team Build

Access

Learn

Network

Solve the Challenge

Upload the Results

Bragging Rights, T-shirt and Diploma

SAS provides problem data.

Have fun while learning!

Feedback Interview.

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A Boot Camp With 3 Tracks and Awards

During Happy Hour, stop by the SAS Hackathon booth in the Innovation Hub
April 17 | 6:45 p.m.

Track 1

Building Trust, One Dashboard at a Time: Ethical Data Visualization Challenge

No-Code in
SAS Visual Analytics

Track 2

Reducing Bias in Credit Approval Modeling Data

Coding + Low-Code in
SAS Model Studio

Track 3

Exploring Predictive Models

Coding in
SAS Viya Workbench

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