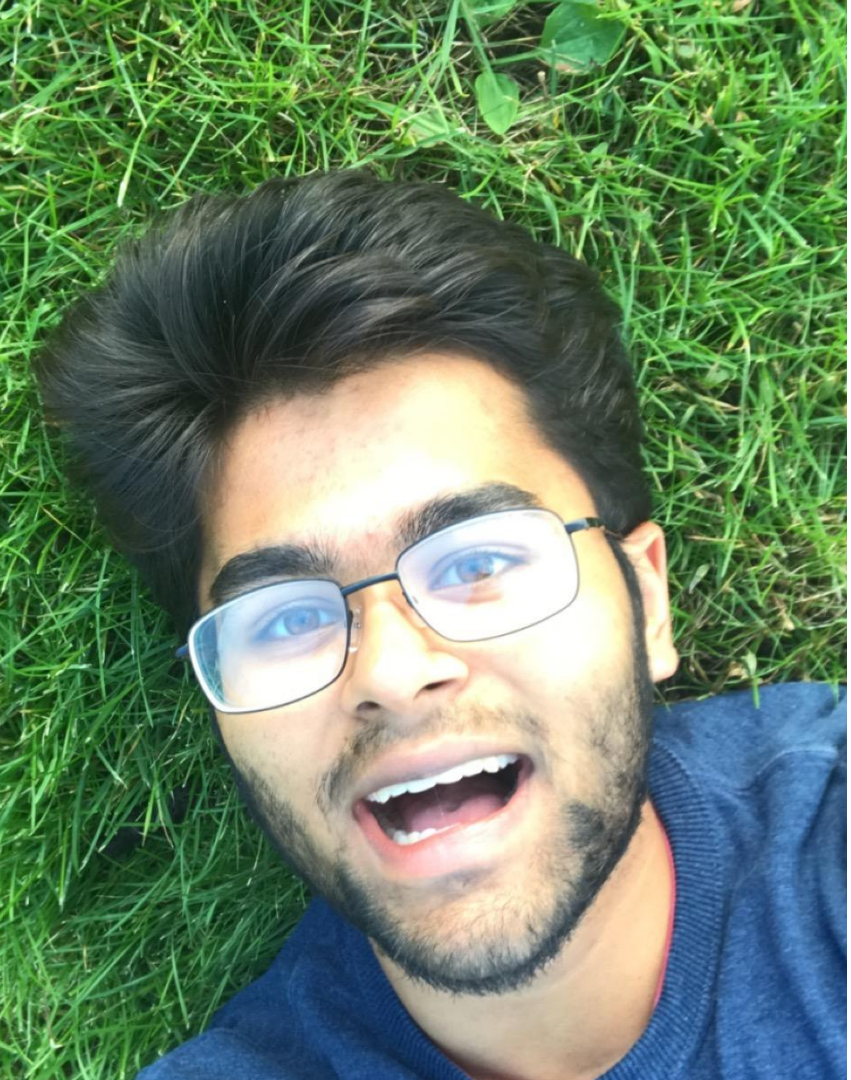
Meeting #01: Introduction

Michigan Hackers Machine Learning Team

Meet Vijay

Junior in CSE
Minoring in Math
From Palo Alto, CA



Meet Raj

Junior in CSE
Minoring in Math and Physics
Work on MIRT.jl framework
From Saint Joe, MI

MH
ML

Team Goals

To create a peer-to-peer community of undergraduates interested in machine learning

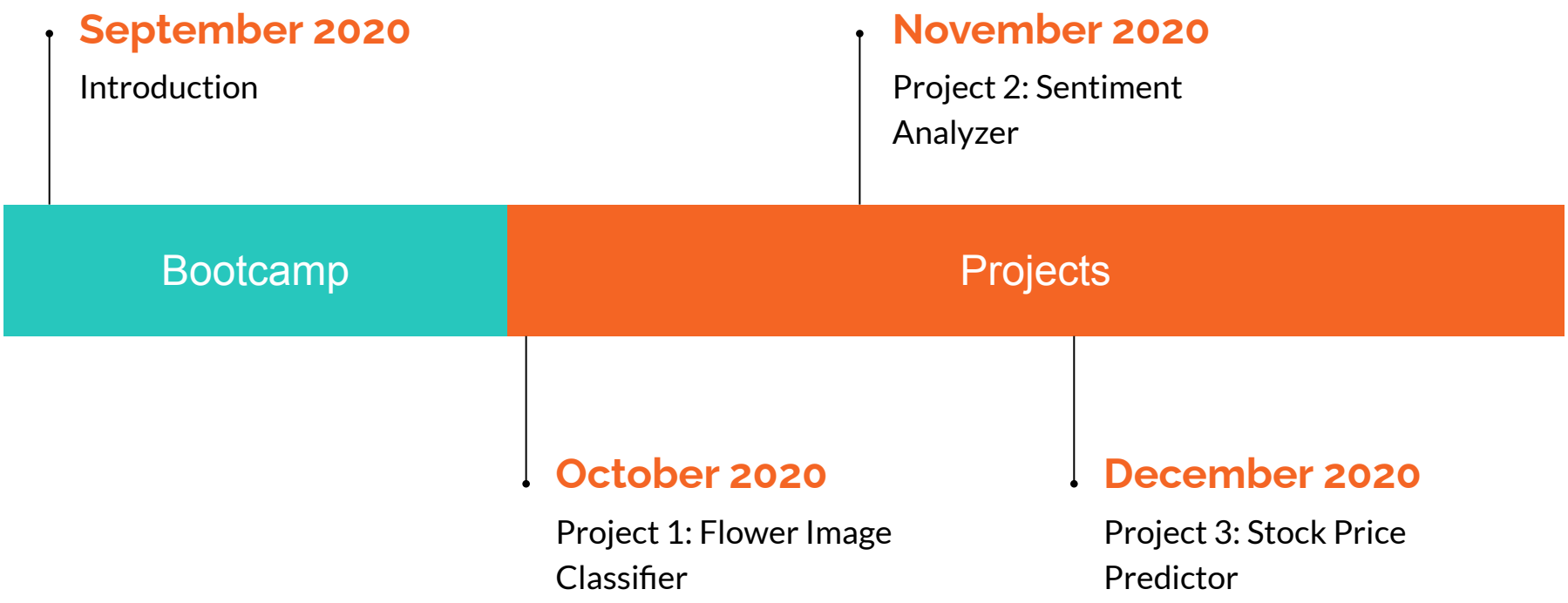
To provide resources and guidance to aid in learning Python, data science, and machine learning

To collaborate on projects with team members

Team Structure

- The team will revolve around creating a solid foundation to learn ML through books, online courses, and projects.
- Weekly presentations
  - First month: basics of ML, basics of Python and libraries, setting up Python environment, basic mathematical concepts
  - Following months: discuss topics in ML (computer vision, NLP, neural networks) and the algorithms and libraries for each. Projects will accompany these lectures
- Members who already have prior experience in ML can collaborate with other experienced members on independent projects and Kaggle competitions

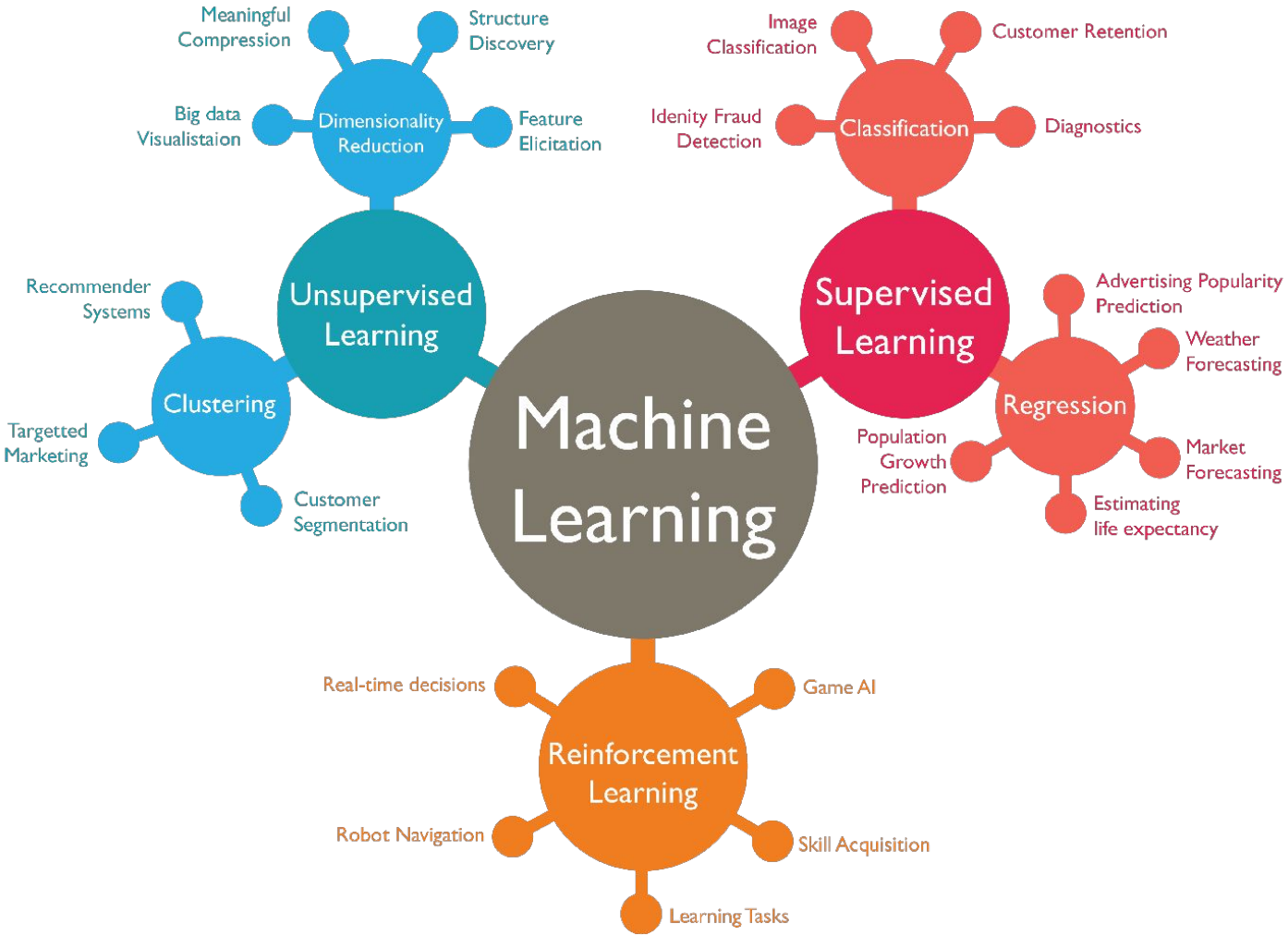
Semester Milestones



Machine Learning

A subset of artificial intelligence where the computer independently learns from data and performs tasks without any explicit instructions.

- **Supervised Learning**
  Labeled data: classification, regression
- **Unsupervised Learning**
  Unlabeled data: clustering, decision trees
- **Reinforcement Learning**
  Trial and Error: navigation, learning tasks


Machine Learning
Unsupervised Learning
Dimensionality Reduction
Meaningful Compression
Structure Discovery
Big data Visualistaion
Feature Elicitation
Clustering
Recommender Systems
Targetted Marketing
Customer Segmentation
Supervised Learning
Classification
Image Classification
Customer Retention
Idenity Fraud Detection
Diagnostics
Regression
Advertising Popularity Prediction
Weather Forecasting
Population Growth Prediction
Market Forecasting
Estimating life expectancy
Reinforcement Learning
Real-time decisions
Game AI
Robot Navigation
Skill Acquisition
Learning Tasks

Applications of AI / ML

Image Processing

- Image tagging / Image Recognition
- OCR or Optical Character Recognition
- Self-driving cars

Text Analysis

- Spam Filtering
- Sentiment Analysis
- Information Extraction

Data Mining

- Anomaly Detection
- Association Rules
- Grouping
- Predictions

Healthcare

- Medical Diagnosis
- Imaging Diagnosis
- Oncology
- Drug Trials

Video Games

- Reinforcement Learning

Robotics

- Industrial tasks
- Human simulations

Recommended Books

Python Crash Course

Beginner

Data Science from Scratch

Intermediate

Hands-On Machine Learning

Advanced

Click on each tab to access the book

Recommended E-Courses

Kaggle Courses

Several mini-tutorials that introduce everything from basic Python to deep learning to game AI.

Andrew Ng's ML Course

A free online course on Coursera taught by Stanford Professor Ng. Known to be the most popular ML e-course.

Google ML Crash Course

For more experienced developers. Introduces Tensorflow 2.0 with several online projects.

Click on each tab to access each online course

For Next Week...

- Download the Onboarding Document and go through the steps to join MHML
- Look over the recommended books and e-courses and fill out this form to let us know what your preferences
- Schedule a meeting with the team leads to have a casual meet-n-greet
- Learn Python from courses 1-3 of this Coursera specialization, and/or set up Jupyter and Anaconda on your computer
- If you have more experience with ML and want to work at your own pace, write up a proposal on what you want to accomplish and email it to the team leads.

Thank You!

Michigan Hackers Machine Learning Team
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Provide Feedback