Matthew Varona

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Education

New York University Abu Dhabi   *Abu Dhabi, UAE/New York, USA*
BACHELOR OF SCIENCES, COMPUTER SCIENCE + BACHELOR OF ARTS, INTERACTIVE MEDIA (GPA: 3.8/4)   *2019-2023*

- Coursework taken in New York, Prague, Berlin, and Abu Dhabi.

Experience

NYU Tandon School of Engineering   *Remote*
RESEARCH INTERN   *May 2021 - Present*

- Project: **Visualizing model uncertainty in machine learning**, with Prof. Enrico Bertini
- Develops system to facilitate exploration of decision boundaries in machine learning models to support error analysis and interpretability.
- Designs and implements novel visualizations that illustrate statistical context behind instances of model uncertainty.

NYU Abu Dhabi Social Science   *Remote*
RESEARCH INTERN   *September 2021 - February 2023*

- Project: **Identifying listening contexts and musical features from user-generated YouTube playlists**, with Prof. Minsu Park
- Conducts network analysis to explore relationship between YouTube playlist contexts (playlists for study/workout/etc.) and high-level acoustic traits.
- Uses topic modeling and qualitative coding to organize 300 000+ playlists into contextual listening categories.

Hasso Plattner Institute   *Berlin, Germany*
RESEARCH INTERN   *May 2022 - August 2022*

- Project: **Adaptive vector drawing toolsets for laser cutting**, with Prof. Patrick Baudisch
- Designed and tested algorithms for automatically evaluating drawing toolsets based on factors like ease-of-use, learnability, and specialization.
- Generated and studied 80+ digital drawing workflows to uncover properties of optimal drawing toolsets.

NYUAD Center for Space Science   *Abu Dhabi, UAE*
RESEARCH ASSISTANT   *October 2020 - June 2021*

- Conducted linear regression and exploratory analysis on solar radiation data from Mars in support of the UAE's first-ever interplanetary space mission.
- Used Matplotlib and Python to create 100+ tailored plots of atmospheric data from the Mars Atmosphere and Volatile EvolutioN (MAVEN) spacecraft.

Sakay.ph   *Taguig, Philippines*
SOFTWARE ENGINEERING INTERN   *September 2020 - October 2020*

- Developed backend and fine-tuned AI for bilingual customer service chatbot using Node.js and Dialogflow.
- Collaborated with design team to conduct user research and implement revamped UX flow for chatbot, doubling fulfillment rate from 40% to 80%.

DATA SCIENCE INTERN   *May 2020 - August 2020*

- Joined Sakay as second-ever member of the data team; developed ETL pipelines for transit route info 50x faster than previous infrastructure.
- Designed and built full-stack data analytics tool for interactively visualizing transport coverage and commuter demand.
- Wrote and published exploratory analysis of transport coverage and demand during COVID-19 lockdown in Metro Manila.

Technical Projects

Audibird: bird sounds from around the world
TECHNOLOGIES: P5.JS, JQUERY | LINK   *May 2022*

- Created an interactive visualization that showcases crowdsourced bird sounds submitted by birdwatchers around the globe.
- Developed a web app that aggregates data from the eBird, WikiData, and xeno-canto APIs and displays it on MapboxGL.

AI Got Hands: game tutorial and heuristic generation with reinforcement learning
TECHNOLOGIES: TENSORFLOW, KERAS | LINK   *August 2021*

- Developed a reinforcement learning agent that successfully plays the fighting game FightingICE.
- Extracted situational gameplay heuristics from the AI's behavior over thousands of matches to determine optimal advice for beginner players.
- Implemented Deep Q-Learning and a custom reward function to achieve 70% winrate against other AI agents.

Skills

Languages   Python, Javascript, Typescript, C#, C++, Arduino, Java, Unity, SQL
Abilities   Data Analysis, Data Visualization, User Research, Machine Learning, Web Development, Game Development, Laser Cutting, 3D Printing