Matthew Widjaja

Contact me and learn more at
http://wimagine.org/matt

Primary Tech Toolkit

Python *Since 2015*

Bash/Zsh *Since 2014*

Git *Since 2018*

Academic History

MS in Data Science and Strategic Analytics

Stockton University in 2017.

4+1 Graduated Program.

4.0 GPU with Program Distinction Honors.

BS in Computational Science

Stockton University in 2014.

Minored in Math and Biology.

3.76 GPU with Cum Laude

Honors Program Distinction from the Honors Program.

HS for Allied Health

Gloucester County Institute of Technology in 2010.

Graduated with 16 credits from Rowan Medicine and College.

Top 5 Technical Pillars

Machine Learning and Deep Learning

Data Pipelines
(on and off the cloud)

Data Processing, Handling, and Storage

Code Documentation and Education

Technical Leadership
(including Agile)

Current Roles

Lockheed Martin ATL

Senior Engineer (2018 - Present) — Intelligent System Works

- Developed a **Data Engineering Python Pipeline,** with respect to the unique needs and operating environments of each customer. This pipeline extracts raw data, sanitizes it, transforms it into usable features, and then models using that data. This Pipeline has been deployed on AWS, a Desk-supported cluster, and locally.
- Trained **Machine Learning and Neural Network** models in Python, for regression and classification purposes, using an in-house dataset of several hundred participants with wearable devices and other environmental sensors.
- Co-proposed and co-led a research project to investigate the effects of **cognitive biases in developers.** More details about this project is on the next page.
- **Created game-theory models** and integrated them within an in-house Docker + Python based ML platform.
- Created the first continually updated **Wiki Documentation** of our IT environment, on my own initiative, to help onboard newer engineers more efficiently and existing engineers keep their resources updated.
- Created a server side instance of **JupyterHub** to encourage greater use of lab resources.
- Received an **Employee of the Quarter** award in 2021 for significant contributions to the engineering and team culture of ATL.

Epic Church

Rock & Database Developer (2021 - Present) — Operations, Staff Volunteer

- Managing a **Microsoft Azure** environment to host a Relationship Management Server (RockRMS, using a SQL core) to store persons records and engagement data for 20k+ individuals.
- Implemented a **cloud based Check-In platform**, operating on a variety of platforms such as SMS text messages, iPads, and Windows devices.
- Proposed and created a **dynamic responsive web page**, customized for every guest per page view, to recommend further steps of engagement based on their location, prior history, and current availability.
- Supporting **Agile-based communications** between non-technical clients at the Church with the other members of the technical team in regards to expectations.

Publications from Current Roles

Programmatically Identifying Cognitive Biases Present in Software Development

LM ATL Research Project (2020-2021) — Co-Program Leader

- Supported the process to identify **cognitive biases** that are most likely to be present in software engineers.
- **Annotated code bases**, with the team, to denote commit messages, code comments, and docstrings which are likely to be biased, and how so.
- Engineered a novel **NLP pipeline using Spa.cy** to parse code commit artifacts (which are often not similar to traditional English). This model determined whether that artifact was or was not biased. F1 Scores averaged around 80%.
- Co-wrote a poster and paper, which was shared and published at the global **2021 Scipy Conference**. To read the paper, scan this QR code with your smartphone.

Matthew Widjaja

My Technology Stack

- **OS:** Linux, macOS, and Windows
- **Programming:** C/C++, MATLAB, Python, and R
- **Automation:** Crontab and Jenkins
- **Cloud Computing:** AWS (EC2, Lambda, Lightsail, S3), DigitalOcean, Domino, and Microsoft Azure.
- **Containers:** Docker and Kubernetes
- **Databases:** AWS DynamoDb, ElasticSearch, MySQL, SQL, SQLite, and Postgres.
- **GPU:** Cuda
- **Terminal:** Bash, Csh, Tcsh, & Zsh
- **Version Control:** Git (GitHub + GitLab), Subversion, and Clearcase
- **Web & Text:** HTML/CSS, Bootstrap, Google Analytics, Markdown, and Wordpress

Python Libraries

- **Biology:** Biopython
- **Data Processing:** MissingNo, Pandas, and Pickle
- **Data Visualization:** Bokeh, Matplotlib, Seaborn
- **Deep Learning:** Keras, PyTorch, Theano, and TensorFlow
- **Game Theory:** openai and retro
- **Math:** Numpy and Scipy
- **NLP/Language:** Beautiful Soup, NLTK, Prodigy, and Spa.cy
- **Machine Learning:** Scikit-learn
- **Parallel Computing:** Dask
- **Story Telling:** Jupyter Lab (on device and deploying on server)
- **Web:** Flask and Requests

Models Developed

- **ML:** Classification & Regression Models
- **DL:** TimeGAN & TimeGAN2
- **RL:** MA-DDPG
- **NLP Models**

Prior Roles

Lockheed Martin RMS

Engineer (2014 - 2018) — Radar Systems, Modeling & Simulations

- Responsible for the coverage, submission, and analysis of our radar simulation's automated QA testing as the **Regression Lead.**
- **Engineered** solutions to store and visualize these increasing quantities of data with Python, enabling us to run exponentially more cases with greater fidelity.
- Rolled out **Continuous Integration** processes, in conjunction with the version control script changes, to ensure software stability throughout the day.
- As a scrum master, led the radar's software simulation team as the department introduced **Scaled Agile** development practices.
- Received an **award** recognizing advancements in Automation and Agile practices, which was awarded to one engineer at Lockheed Martin's Moorestown campus.

Stockton University

Part-Time (2012 - 2014) — External Affairs, Web Communications

Prior Projects and Publications

Classifying Fashion MNIST Data

Graduate Research/Academic Project (2017) — with Dr. Russ Manson

- Created **Convolutional Neural Networks** using Python, Keras, & TensorFlow to classify the Fashion MNIST Dataset.
- Accelerated the performance of the neural network by using an **NVIDIA GPU**.
- Tested the neural network by **experimenting** with various hyper-parameters and layer configurations, achieving about 91% accuracy with a 31% loss.
- Compared personal model with a modified **VGG** and **ResNet** Convolutional Neural Networks, with respect to the given data set.
- **Presented** the conclusions to students and to Lockheed Martin using Jupyter.

Modeling Ecological Networks

Undergraduate Research Project (2014) — with Dr. Jason Shulman

- Awarded the **Stockton Presidential Research Fellowship Grant** for advanced senior research.
- Programmed an **effective ecological model** which can predict the required conditions in order to achieve a specified goal and is comparable to Lotka-Volterra, while using less computational and experimental resources.
- Programmed a variety of **MATLAB and C scripts** in order to produce the synthetic data required to construct the final model.
- Published in Stockton Innovations: A Journal of Undergraduate Research.
- Presented at the Northeast Regional Honors Council 2014 Conference (a Peer-Review conference), Stockton's Day of Scholarship, Stockton's Graduate School Research Symposium, and Stockton's Research Symposium.

Novel Approach to Circuit Analysis

Undergraduate Research (2014) — with Dr. Jason Shulman

- Awarded **first place** in Stockton's NAMS Research Symposium in 2014.
- Assisted in streamlining the MATLAB code modeling an **electrical model,** that is comparable to Kirchhoff's Laws, while requiring less resources overall.
- Published in the American Journal of Physics and Stockton Innovations: A Journal of Undergraduate Research.