

# Andrew Morgan

[andrew.morgan11z@gmail.com](mailto:andrew.morgan11z@gmail.com)

Cell Phone: (412) 651-8221

Pittsburgh, PA, 15232

GitHub Account: <https://github.com/amm414/>

Personal Website: <https://andrew-morgan-website.herokuapp.com>

*Feel free to contact me at the listed email or phone number above.*

## Education

### Bachelor of Science

University of Pittsburgh, Pittsburgh, PA

December 2019

Double Major: **Economics-Statistics** and **Computer Science**

Cumulative GPA: **3.6/4.0**

Computer Science Coursework GPA: **3.6/4.0**

Economics-Statistics Coursework GPA: **3.7/4.0**

Dean's List: 7 out of 9 Semesters

*Magna Cum Laude*

## Work Experience

### Frontend Developer and Project Liaison

The Process Consultant, Pittsburgh, PA

05/2019 – 08/2019

- Migrated demo site content to new content management system to attract new clients.
- Enhanced user-interface to allow clients and users to easily upload and navigate content.
- Ensured management and technical teams have aligned goals and mutual understanding.

### Frontend Developer Intern

Imagine Careers, Pittsburgh, PA

05/2017 – 08/2017

- Created modern-styled dashboard interface allowing clients to tailor their accounts.
- Collaborated with team to improve search and filtering system to increase user base.
- Increased user retention by adding search and filtering prompt within results.

**Barista**, Crazy Mocha, Pittsburgh, PA

08/2016 – 10/2018

## Software Developer/Engineer Skills

### Programming Languages:

Python (Proficient)	Java (Proficient)	Ruby (Proficient)
JavaScript (Fluent)	HTML (Proficient)	CSS (Proficient)
C (Fluent)	PHP (Fluent)	

### Databases, Frameworks:

Flask (Python)	PostgreSQL
Oracle DB (SQL)	Angular (TypeScript, JavaScript)

### Libraries:

jQuery (JavaScript)	SQL-Alchemy (Python)	Gunicorn (Python App Server)
PyTest (unit-testing Python)	Alembic (Database Migration)	

### Software:

Unix/Linux	Heroku	Excel
Git (GitHub, GitLab)	STATA	Minitab
Virtual Machines (Hyper-V)	Tableau	JetBrains
Visual Studio	Eclipse	Atom (Editor)

### Other Software Developer/Engineer Skills:

Software Design Lifecycle (SDLC)	Test-Driven Development
Agile Development	AJAX Web Applications
Full-Stack Development (Website as example)	Quality Assurance, Automated Testing
Database Management (SQL)	Frontend Development
Content Management Systems	

## Data Scientist and Statistician Skills

### Programming Languages and Tools:

Python (Anaconda dist.)	R	MATLAB
Minitab	STATA	Microsoft Excel
Tableau		

### Data Analysis Skills + Methods:

Multiple Linear Regression	Statistical Learning
Bootstrap (Cross-Validation)	Ensemble Methods (Random Forest, boosting)
Time Series Analysis	Model Selection Methods (AIC, Best-Subset)
Stochastic Processes (Markov Chains)	Support Vector Machines
Linear/Quadratic Discriminant Analysis	Convolutional Neural Networks
Dimension Reducing Methods (Lasso, Ridge)	Agent-Based Modeling
Bias-Variance Tradeoff	Unsupervised Clustering (KNN, K-means)

### Python Libraries:

Pandas	NumPy	PyTest (Unit-Testing)
Scikit-Learn	Matplotlib	

### R Libraries:

Tidyverse (Data Tidying)	AstsA (Time Series Analysis)
Gbm (Generalized Boosted Models)	Dplyr (Data Management)
GGPlot (Plotting and Graphing)	Boot (Bootstrap Resampling)
RandomForest (Random Forest Modeling)	Gam (Generalized Additive Modeling)

## Programming Projects + Applications

### Personal Website and Portfolio

Continuous Project

<https://andrew-morgan-website.herokuapp.com/>

- Built with **Python** (Flask), **PostgreSQL**, **JavaScript**, **jQuery**, **AJAX**, **CSS**, **HTML**, **Bootstrap**, and **Heroku** (cloud platform hosting server) to work as a portfolio of projects.
- Primary components:
  - Describes who I am and what my areas of expertise and interests are (homepage, resume page; both from Navbar)
  - Exhibits compilation of my coding applications and projects (like Website Tracker and Sudoku Solver)
  - Exhibits compilation of my written posts, typically regarding data analysis and economic theory.
- Goal: Create an online location to showcase my projects and analyses, while motivating me to improve and continue learning different concepts.

### Website Tracker Application

Maintaining Project

<https://andrew-morgan-website.herokuapp.com/website-tracker/>

- Application manages website's content metadata, update notifications, bug reports, and wish lists.
- Bug reporting tool found through website's Navbar for easy documentation of bugs.
- User authentication system to allow easy modification of reports and wishes.
- Built with **Python** (Flask), **PostgreSQL**, **JavaScript**, **HTML**, and **CSS**.

### CraigVersity Application

Completed Project

<https://andrew-morgan-website.herokuapp.com/craigversity>

- Application designed like Craigslist where sellers and buyers can meet.
- Programming lead among group of 4 other classmates to develop prototype of our application.
- Built using **Flask**, **SQLite3/PostgreSQL**, **SQLAlchemy**, **JavaScript**, **HTML**, **CSS**, **Bootstrap**.

## Programming Projects + Applications CONT.

### Sudoku Solver

Completed Project

<https://andrew-morgan-website.herokuapp.com/programming-repo/sudoku-solver>

- Program that displays and solves N-by-N sudoku puzzles (limit on website to 16x16).
- **Searching heuristics** used to improve performance by more than 95%.
- User-Interface with pretty Sudoku Puzzle formatting and **AJAX** calls to generate and solve puzzles from user requests.
- Built using **Python, JavaScript, jQuery, AJAX, CSS, HTML**

### Agent-Based Modeling

Current Project

<https://andrew-morgan-website.herokuapp.com/agent-based-modeling>

- No content on Website yet. Should be up in 1-2 weeks.
- Agent-based modeling studies macro-level patterns produced by simulating individual agents interacting within the system.
- Skills needed include economics (utility theory, optimization), statistics (sampling and probability), computer science (Object-Oriented design and computational know-how).
- Python and JavaScript program simulating simple forest fire model (currently building).
- Data analysis of results from Schelling segregation model analyzing simulations' data.

### Academic Blog Post Management System

Continuous Project

<https://andrew-morgan-website.herokuapp.com/my-posts/>

- A lightweight content management system for my academic blog posts on my website.
- A database will hold the written content and assets (like images, data, or graphs) and will correctly render posts user requests.
- Templates will be formed to allow consistent formatting across my posts.
- Content of academic blog posts is in following section.

## Written Academic-Styled and Blog-Styled Papers and Posts

### The Overview of the 2008 Housing Bubble and Aftermath

<https://andrew-morgan-website.herokuapp.com/my-posts/posts/2>

- Academic paper studying the 2008 housing crash and mania that preceded it.
- Explanation for the actions taken by investment banks that created a financial blackhole.

### Study of the USA's Increasing Human Capital Throughout the 20th Century

<https://andrew-morgan-website.herokuapp.com/my-posts/posts/1>

- Academic paper studying the USA's increase in education throughout the 20<sup>th</sup> century.
- Analysis of the economic impacts resulting from the shift from physical capital to human capital.

### Summary of Data Analysis of the Human Freedom Index

<https://andrew-morgan-website.herokuapp.com/my-posts/posts/3>

- Data Analysis of the Cato's Human Freedom Index (HFI) performed as team of 5 classmates utilizing R.
- Objective was to use **statistical learning methods** to discover the most relevant variables/predictors.
- **Statistical learning** methods performed including regression (linear, Lasso/Ridge, KNN), classification (KNN, LDA/QDA), ensemble methods (random forests, bagging), bootstrapping (cross-validation).

### Analysis of Education on Economic Metrics

<https://andrew-morgan-website.herokuapp.com/my-posts/collection/education-and-economics>

- Ongoing collection of written posts relating to education and economic metrics.
- The collection of posts will combine economic theory with data analysis.
- Analysis will use both R and Python to analyze effects of education on various economic metrics (like wage, wealth, standard of living, location, happiness).

## Coursework

### Computer Science:

Software Engineering	Artificial Intelligence
Computer Vision	Data Science
Software Quality Assurance	Database Management Systems
Data Structures	Algorithm Implementation
Systems Software	Operating Systems
Formal Methods in Computer Science	Discrete Structures
Web Application Design	

### Statistics:

Statistical Learning	Applied Time Series
Multiple Linear Regression	Mathematical Probability
Stochastic Processes	Mathematical Statistics
Principles of Data Science	

### Economics:

Seminar in Market Manias, Panics, Crashes	Intermediate Macroeconomics
Public Economics	Intermediate Microeconomics
Game Theory	Econometrics