Andrew Morgan

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Links:

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Short Bio:

I am motivated to solve complex business problems with software and data. While I am interested in software development, I graduated with a double major from the **University of Pittsburgh** in **Economics-Statistics** and **Computer Science**. My philosophy follows the life-long learner mentality. I desire to continue growing, learning, and improving both professionally and personally. I hope to deliver results for businesses that improve efficiency, productivity, and improving the world one commit at a time!

Education

Bachelor of Science: Economics-Statistics and Computer Science

University of Pittsburgh   September 2015 – December 2019

- **Overall GPA** of **3.6**/4.0
- *Magna Cum Laude*
- Coursework: Software Engineering, Database Management, *Expanded Section Page 4*
- Economics-Statistics GPA of **3.7**/4.0
- Computer Science GPA of **3.6**/4.0

Work Experience

Software Engineer II

Artech LLC at Google, Pittsburgh, PA   08/2022 – Present

- Developing internal web applications for Google's Software Datacenter Automated Platforms Team using **Angular**.
- Creating interactive visualizations for Google's datacenter event logging and task logging.
- Launched new app for identifying blockers, slowdowns, and dependencies in supply chain.
- Improving search within datacenter app used by technicians to improve efficiency.

Software Developer

Management Science Associates, Inc. (MSA), Pittsburgh, PA   10/2021 – 07/2022

- Developing a big-data analytics web application for Fortune 500 companies in **C#, Angular, PL/SQL** within a 5-person team.
- Delivered automated report scheduling for users when data is updated (weekly or monthly).
- Automated internal user administration and DevOps processes for decommissioning clients.
- Designing and implementing an app tracking performance data from apps to aid troubleshooting.
- Refactoring legacy internal admin tool into existing tech stack (Angular and C# webservices).

Software Developer and Project Liaison

Contractor for The Process Consultant, Pittsburgh, PA   05/2019 – 08/2019

- Developed CMS (web app) for client's process documentation using **JavaScript, HTML/CSS, Ruby on Rails**.
- Automated process for migrating client's data to new application using Python.
- Facilitated communication between senior management and the technical team.
- Delivered recommendations on technologies to be integrated within application.
- Enhanced user-interface allowing clients and users to easily upload and navigate content.

Software Developer, Intern

Imagine Careers, Pittsburgh, PA   05/2017 – 08/2017

- Developed web application like Glassdoor using **JavaScript (Angular v4), HTML/CSS, Git**.
- Created a dashboard view allowing users to modify account policies.
- Collaborated with team to improve search and filtering capabilities.
- Implemented feature to narrow user search results for more accurate results.

Software Developer/Engineer Skills

Programming Languages:

Python	C# (.NET)	Ruby
TypeScript / JavaScript (Angular)	HTML / CSS	Java

Databases, Frameworks:

SQL (PostgreSQL, PL/SQL)	Flask / Django (Python)
Angular (TypeScript, JavaScript)	

Libraries:

jQuery (JavaScript)	SQL-Alchemy (Python, ORM)	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 (IDE)
Visual Studio (IDE)	Eclipse (IDE)	Atom (IDE)

Other Software Developer/Engineer Skills:

Software Design Lifecycle (SDLC)	Test-Driven Development
Agile Development	AJAX Web Applications
Full-Stack Development (Personal Website)	Quality Assurance, Automated/Unit Testing
Database Management (SQL)	Front End Development
REST APIs	Content Management System (CMS)

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	Convolutional Neural Networks
Stochastic Processes	Support Vector Machines
Linear/Quadratic Discriminant Analysis	Unsupervised Clustering (KNN, K-Means)
Dimension Reducing Methods	Agent-Based Modeling
Bias-Variance Tradeoff	

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)

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

Personal Programming Projects + Applications

Project Status Key:

Continuous: A project or work that is long-term and ongoing. These projects often are designed to never really finish, but to have continual updates of content and improvements to functions.

Completed: A project or work that is completed with no plans for future additions to it. Bug fixing will continue, but the changes should be very minimal.

Maintaining/Maintenance Phase: A project or work that is released in a stable/acceptable condition, however future additions or changes to content may occur. Potentially, a project or work may have future planning and designing for future functionality or content.

Current: A project or work that is currently being built, developed, analyzed, or planned (depending on the details of either software, economic analysis, or statistical analysis). There should be at most 3 projects that are considered current at a given time.

Future: Primitive state for a project or work. There has been some planning, but the planning is not finalized. The project/work is not being worked on.

Personal Website and Portfolio   July 2020 – Present (Continuous Project)
https://andrew-morgan-website.herokuapp.com/

- Developing personal website to display my portfolio of current and past projects.
- Integrating personal and group projects from before and after university.
- Designing simple, responsive, yet attractive user interface.
- Developed with **Python** (**Flask**), **PostgreSQL**, **JavaScript**, **jQuery**, **AJAX**, **Bootstrap**, CSS, HTML, and **Heroku**.
- Components of Website:
  - My resume, CV, and introduction to who I am and what I am interested in.
  - Exhibits personal projects from academic blog posts (typically focused on economic theory) to a simple Sudoku Solver to CRUD (Create, Read, Update, Delete) applications like my Website Tracker App and CraigVersity.
  - A repository to track and display my progress as I improve my ability and skills.

Website Metadata Tracker Application   Jan 2021 – Present (Maintenance Phase)
https://andrew-morgan-website.herokuapp.com/website-tracker/

- Designed application to track website's metadata, bug reports, feature requests, users, and content updates.
- Integrated bug reporting system into Navbar for easy bug documentation throughout site.
- Implemented user authentication system allowing users to create, edit, and request bug reports and features.
- Maintaining application and correcting bugs found, while designing future functionality.
- Developed with **Python** (**Flask**), **PostgreSQL**, **JavaScript**, HTML, and CSS.

Personal Programming Projects + Applications CONT.

Sudoku Solver   June 2021 (Completed Project)

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

- Built and designed program to solve N by N Sudoku puzzles (like 9x9, 6x6, or 12x12 puzzles).
- Optimized performance by 95% after implementing searching heuristics and inferencing.
- Deployed program to my website with enhanced UI for Sudoku puzzle formatting.
- Built using **Python**, **JavaScript**, **jQuery**, **AJAX**, CSS, HTML

Agent-Based Modeling   06/2021 – Present (Current Project)

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

- Agent-based modeling creates a system of many independent, autonomous agents that decide on actions based on their perceptions, often helping to understand the resulting system-level, macro-level trends.
- Capturing macro-level phenomena by simulating the interactions of individual, autonomous agents.
- Constructing a composition-based models to simulate different systems with parameters to analyze.
- Implemented the Schelling Segregation and Forest Fire models with editable parameters.
- Integrating into my website with trend analyses and visualizations using **JavaScript** and **Python**.
- Learning by applying skillset of economics, statistics, and programming to new domain of problems.
- Developing with **Python** for logic and **JavaScript**, **jQuery**, HTML, CSS for visualization.

Academic Blog Post Management System   Future Project (Planning Phase)

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

- **Basic features implemented by September 2021. (Depends on website migration to Django)**
- Designing simple, lightweight content management system for my academic blog posts.
- Implementing a blog post content tracker to manage web page content, asset location, and searchability.
- Future features include user authentication system for commenting and liking/disliking posts, REST API for functionality, generating HTML page for specified post, filtering and searching through my posts easily (Elasticsearch potentially).

School Programming Projects + Applications

CraigVersity Application   Sept 2019 – Dec 2019 (Completed Project)

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

- Led 4 other classmates in software engineering project as lead programmer.
- Deployed prototype of application like Craigslist, a place for bringing sellers and buyers together.
- Documented project following the **waterfall software design lifecycle** (SDLC).
- Developed with **Python** (**Flask**), SQLite3/**PostgreSQL**, **JavaScript**, HTML, and CSS.

Data Analysis of the Human Freedom Index   Jan 2019 – May 2019 (Completed)

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

- Analyzed large, high dimensional dataset quantifying human freedom with 5 classmates using **R**.
- Performed statistical methods with **R** including linear regression, QDA, LDA, dimension reduction, random forest.
- Performed data analysis, wrote reports detailing findings, and presented results as team.
- Identified most significant variables affecting the country's human freedom with **statistical/machine learning**.

Convolutional Neural Network Classifier   Completed Project

- Built neural network utilizing transfer learning with **AlexNet** within **MATLAB** classifying scenery in images.
- Improved classifier results from 30% to 75% with CNN and transfer learning.
- Designed a small, 3-layered CNN with specified activation functions.

Coffee House Database Management System   Completed Project

- Designed database system for hypothetical chain coffee shop in team of 5 in the database course.
- Implemented successful command-line application using **Java** and **Oracle** to follow **ACID** principles.
- Ensured concurrency issues were discovered and resolved without leading to data inconsistency.

Ruby Rush TDD Project   Completed Project

- Created a game where the player tries to mine the most rubies in a specified timeframe.
- Followed test-driven development techniques to ensure high unit test coverage in **Ruby**.
- Automated testing with Minitest (**unit-testing**) and SimpleCov (**code coverage**).

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

- Explored the primary reason for the 2008 housing crisis and preceding mania.
- Studied how irrational exuberance created the foundation of the mania.
- Explained how the leveraged investment banks caused a financial blackhole when the panic set in.

Study of the USA's Increasing Human Capital Throughout the 20th Century
https://andrew-morgan-website.herokuapp.com/my-posts/posts/1

- Highlighted the trends of schooling throughout the 20th century within the United States.
- Analyzed how the growing human capital from increased schooling affected the economy.
- Explained the reason individuals pursued high school and university instead of immediate work.

Summary of Data Analysis of the Human Freedom Index
https://andrew-morgan-website.herokuapp.com/my-posts/posts/3

- Analyzed a large, high dimensional dataset measuring human freedom with a team of 5.
- Performed statistical methods with **R** including linear regression, QDA, LDA, dimension reduction, random forest.
- Performed data analysis, wrote reports detailing findings, and presented as team to class these findings and insights.
- Identified most significant variables affecting the country's human freedom with **statistical/machine learning**.

Analysis of Education on Economic Metrics
https://andrew-morgan-website.herokuapp.com/my-posts/collection/education-and-economics

- Ongoing collection of my academic blog posts relating to education and economic metrics.
- Analyzing various datasets surrounding education, quality of life metrics, income, wealth, etc.
- Writing academic blog posts detailing findings from my analysis and research of other papers.