James Baker

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Education

University of Pennsylvania, May 2025   Philadelphia, PA
- *School of Engineering and Applied Science:* BSE in Computer Science with Minor in Music. GPA: 3.71/4.00

Central Bucks East High School, June 2021   Doylestown, PA
- Recovered from traumatic brain injury (3+ months full-time in hospital) to achieve Valedictorian (525 students)
- *ACT Scores (36 max):* Composite 36 | English 36 | Math 35 | Reading 36 | Science 36

Work Experience

Merck & Co., *IT Emerging Talent Intern,* West Point, PA   Jun 2023 - Present
- Developed user-friendly library tool using React frontend and AWS cloud resources for centralized storage of widely used code snippets keyed by topic and title with admin support for efficient data management
- Redesigned and coded user-centric Confluence landing page, collaborating with stakeholders to design modern and intuitive interface, resulting in 50% engagement increase in clicks to key self-service testing subpages
- Core agile team member, recognized by team leadership for exceptional knowledge management contributions

University of Pennsylvania: Spark Tech & Design, *Developer,* Philadelphia, PA   Sep 2022 - Present
- Led 5-member software team to build mobile Food Truck review application with functionality for 15 local Philadelphia food trucks, earning Best Division Project of semester (React Native interface, Maps support, Axios client, REST API endpoints, and Django database)
- Studied React.js and Django, applied knowledge in mini-projects to gain practical full-stack web development experience

University of Pennsylvania, *Data Structures and Algorithms Class Tutor,* Philadelphia, PA   Sep 2022 – May 2023
- Explained complex concepts, guided problem-solving exercises, provided study tips and time management strategies to help students improve their grasp of Data Structures and Algorithms and enhance academic performance
- Received positive feedback from students for creating supportive learning atmosphere, cited as "very good at explaining all [DS&A] topics" on end of semester survey, with 100% positive reviews

Program in Algorithmic & Combinatorial Thinking (PACT), *Teaching Assistant*   Jun 2022/23 – Jul 2022/23
- Taught recitations to 100+ HS students from around the world, reviewing Theoretical Computer Science lecture content
- Mentored twelve students to date; graded their homework, coordinated weekly meetings, monitored student progress
- Earned commendation from both students and program organizer for exceptional teaching and mentoring capabilities

Project Experience

ArXiv Dataset Analysis, *https://github.com/jameswbaker/ArXivDatasetAnalysis*   Mar 2023 – May 2023
- On dataset of 500,000+ scholarly articles, performed preprocessing, exploratory data analysis (EDA), and modeling
- Built graph structure and implemented Apache Spark distributed BFS algorithm to analyze connectivity and degrees of separation between collaborating authors; tested on various authors, discovered different subgraphs and cliques

NLP Machine Learning Evaluation, *https://github.com/Tbot101/CIS-5190-Project*   Mar 2023 – May 2023
- Performed NLP sentiment analysis on Kaggle dataset; used variety of models (Logistic Regression, Neural Network, BERT) and performed analysis under different data transformations (label shift, time shift) to explore model capabilities

Digital Tuner, *https://github.com/jameswbaker/FT-Tuner*   Feb 2023 – May 2023
- Built musical tuner (input: .WAV file; output: note letter name) by implementing the Fourier transform algorithm and maxima calculator; analyzed performance accuracy and runtime on sounds of varying pitches and timbres

Math Community Teaching Project   Sep 2021 – Dec 2021
- Led series of hands-on math lessons to inner-city students at Philadelphia's Robeson HS, improved scores on state exam

Skills

Languages/Frameworks: C, Django, HTML/CSS, Java, JavaScript, OCaml, Python (Matplotlib, NumPy, Pandas, PyTorch, scikit-learn), React JSX, React Native, Spark, SQL, x86 Assembly

Tools: Apache Spark, AWS (Lambda, DynamoDB), Confluence, Figma, Git, Jira, Jupyter Notebook, Microsoft Office Suite

Relevant Coursework

Algorithms and Data Structures, Applied Machine Learning, Big Data Analytics, Computer Systems, Linear Algebra, Engineering Probability, Interactive Computer Graphics*, Introduction to Algorithms*, UI/UX Design*   *currently taking

Leadership

Phi Kappa Psi Fraternity, *Historian (governing position)*   Dec 2022 – Present
Fanny Chapman Pool and Doylestown YMCA, *Lifeguard/Swim Instructor*   May 2018 – August 2022
Central Bucks East Swim Team, *Captain*   Feb 2017 – May 2021