Akash Kumar

Software Engineer

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Work Experience

- *Data Analyst Intern* – nth Solutions, LLC, Coatesville, PA   May 2021 – Aug 2021
  - Analyzed inertial measurement unit (IMU) sensor data using Python, MATLAB, and Octave.
  - Utilized complex mathematical tools like quaternions, complementary and Kalman filters to combine accelerometer, gyroscope, and magnetometer data in a process known as sensor fusion to get an accurate estimate of the 3D orientation of the IMU module.
  - Converted a filtering algorithm from Python to a 3x faster MATLAB implementation.
- *Teaching Assistant (TA)* – Dept. of Computer Science and Engineering, Penn State, PA   Aug 2022 – present
  - Taught classes: Data Structures and Algorithms, Communication Networks, Theory of Computation
  - Held office hours, graded assignments and exams, and delegated tasks to other TAs and graders.
- *Research Assistant (RA)* – Dept. of Computer Science, West Chester Univ., PA   Oct 2020 – May 2021
  - Worked in a team of 6 to conduct statistical analysis of Eclipse refactoring bug reports.
  - Collected 5000+ refactoring bug reports from Eclipse's Bugzilla website using Beautiful Soup.
  - Presented to university professors at WCU's *Spring 2021 Research and Creative Activity Day*.
- *Car Logo Identifier (computer vision project)* – identifies car brands based on their logo images.   May 2023
  - Performed unsupervised learning on a car logo dataset using the SimSiam neural network.
  - Accelerated training of PyTorch model by up to 6x using Apple M2 and Nvidia GTX 1070 GPUs.
- *Club Co-founder and President* – Competitive Programming Club, West Chester Univ., PA   Aug 2019 – May 2021
  - Fostered a competitive and fun atmosphere to encourage active club participation.
  - Curated problems and study material to help members prepare for programming competitions.
  - Developed guidelines, systems and methods to ensure the club's growth and success.
- *Social Media Lead* – Institute for Networking and Security Research (INSR), Penn State   Nov 2024 - present

Skills

- **Languages:** Python (expert), Java (proficient), C/C++ (proficient), MATLAB (prior exp.), JavaScript (prior exp.), HTML/CSS (prior exp.), SQL (prior exp.)
- **Paradigms and Methodologies:** object-oriented, functional, declarative, event-driven, Agile, Scrum, DevOps, unit testing, integration testing, black/white box testing, regression testing, performance testing
- **Types of Tools Used:** Git version control, GitHub, machine learning and data science libraries such as TensorFlow, PyTorch, NumPy, and Pandas, virtualization software, IDEs, debuggers, CLIs, Linux, microcontrollers, typesetting software, LLMs

Education

West Chester University, West Chester, PA

Master of Science in Computer Science, GPA: 4.0   Aug 2020 – Dec 2021
Bachelor of Science in Computer Science with Minor in Math, GPA: 4.0   Aug 2017 - May 2020

Certifications

- Deep Learning Specialization Certificate from DeepLearning.AI   June 2022
- AWS Certified Cloud Practitioner   Jan 2021
- Oracle Certified Professional, Java SE 11 Programmer   Sept 2020
- Scrum Alliance Certified Scrum Master   June 2020
- Data Science Professional Certificate from HarvardX   June 2019