Akash Kumar

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Education

Penn State University, University Park, PA
- *PhD in Computer Science and Engineering*   Jan. 2022 - present

West Chester University, West Chester, PA
- *Master of Science in Computer Science*   Dec. 2021
  - Cumulative GPA: 4.0
- *Bachelor of Science in Computer Science*   May 2020
  - Cumulative GPA: 4.0 (Summa Cum Laude)
  - WCU Dean's List all semesters
- *Minor in Mathematics*   May 2020

Relevant Coursework

Data Structures & Algorithms	Artificial Intelligence	Software Engineering
Cloud Computing	Parallel Computing	Programming Paradigms

Research/Experience

- *nth Solutions, LLC* – Data Analyst Intern   May 2021 – Aug. 2021
  - Worked on calculating the 3D orientation of an Inertial Measurement Unit (IMU) which consists of three sensors: an accelerometer, gyroscope, and magnetometer. This IMU module is used inside car tires to inspect them for any wear and tear or imperfections which might make the car uneven and/or hard to control.
  - Used complementary filters and Kalman filters to analyze and combine IMU sensor data in a process known as sensor fusion in order to get accurate estimates of the 3D orientation of the IMU module.
  - Learned how to use NumPy, Pandas, MATLAB, and Octave.
  - Did extensive research on complimentary filters, Error State Kalman filters, and pedestrian dead reckoning (PDR).
- *Research Assistant*, Department of Computer Science, West Chester University   Oct. 2020 – May 2021
  - Worked in a team of six to conduct statistical analysis of Eclipse refactoring bug reports.
  - Collected 5000+ refactoring bug reports from Eclipse's Bugzilla website using Python's Beautiful Soup library.
  - Presented to university professors at WCU's *Spring 2021 Research and Creative Activity Day*.
- *Parallel Particle Simulation* – simulates particle interaction in 2D space. Built with: C++, Markdown   May 2020
  - Used the OpenMP and MPI parallel programming APIs to parallelize the serial code.
  - Implemented a spatial hash data structure to avoid unnecessary force applications between particles.
  - Wrote project report to compare the performances of the serial, OpenMP and MPI code.
- *Heart Disease Predictor* – predicts heart disease in patients. Built with: R, R Markdown   June 2019
  - Built to satisfy the HarvardX data science professional certificate.
  - Used machine learning models such as logistic regression, SVM and random forest.
  - Wrote data analysis report to showcase findings and compare the results of the trained ML models.
- *Earthseed* – an Arduino game based on the mobile game *Seedship*. Built with: C, Arduino   Nov. 2018
  - Built at HackPrinceton Fall 2018. Collaborated in a team of three using GitHub.
  - Faced a few hardware-related challenges while setting up the circuit and I/O on the breadboard.
  - Had confusion with project responsibilities and learned the value of good communication.

Skills

- **Languages:** Python, Java, C/C++, HTML/CSS, JavaScript, MATLAB, Octave, R, Markdown
- **Paradigms:** object-oriented, functional, declarative, event-driven
- **Tools/Frameworks:** Git/GitHub, Docker, NumPy, Pandas, TensorFlow, Keras, Open AI Gym, Matplotlib, Jupyter Notebook, Visual Studio Code, Intellij IDEA, PyCharm, LaTeX, Linux, Arduino, Raspberry Pi
- **Other essentials:** Agile, data structures and algorithms, data science, analytical skills, problem solving skills

Certifications_____

- AWS Certified Cloud Practitioner   *Jan. 2021*
- Oracle Certified Professional, Java SE 11 Programmer   *Sep. 2020*
- Scrum Alliance Certified ScrumMaster   *June 2020*
- Data Science Professional Certificate from HarvardX   *June 2019*

Awards and Memberships_____

- *The Outstanding Graduate Student Award of 2022* - awarded April 25th, 2022 by Dr. Richard Burns, Chair of the Computer Science Department of West Chester University.
- *Upsilon Pi Epsilon Honor Society for the Computing and Information Disciplines* - inducted April 1th, 2022 by the West Chester University chapter of UPE. Invites to join UPE are based on outstanding achievement, high scholarship and character.

Activities_____

- Competitive Programming Club – co-founder, president and vice-president   *Aug. 2019 – May 2021*
    - Helped create a competitive atmosphere to encourage active participation.
    - Was in charge of finding and curating questions to practice for programming competitions.
- Computer Science Club   *Aug. 2017 – May 2020*
- 3 hackathons, 2 MLH Local Hack Days   *Dec. 2017 – May 2020*
- 3 programming competitions   *Jan. 2019 – Jan. 2021*