Swopnil Panday

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Education

Villanova University Villanova, PA

Bachelor of Science in Computer Science, Minor in Mathematics *Aug. 2022 – May 2026*

- GPA: 3.81/4.0
- Villanova Presidential Scholar (Top 25 from 1600 students)
- About Me: Passionate about building technology that better lives, combining my love for AI/ML and software development to turn creative ideas into real solutions.

Experience

Undergraduate Researcher June 2024 – Present

Center for Research and Fellowship *Villanova, PA*

- Developed and implemented CNN models for currency bill recognition to assist visually impaired individuals and international travelers, utilizing transfer learning with ResNet50, VGG16, and Inception-v3, achieving 90% accuracy on a 50,000-image test set and reducing training time by 60%.
- Optimized model performance through 10 image augmentation techniques and extensive hyperparameter tuning, reducing overfitting by 40 and improving validation accuracy for reliable real-world use by blind users.
- Created a diverse dataset of over 50,000 currency images from 25 countries, incorporating various lighting conditions and camera angles, to ensure robust performance in various real-world scenarios faced by visually impaired users.
- Designed and developed an accessible iOS application with voice feedback for blind users, enabling real-time currency detection and denomination announcement in multiple languages.

Undergraduate Research Assistant Feb. 2023 – Aug 2023

Villanova University *Villanova, PA*

- Conducted extensive research on dataset image redundancy reduction, evaluating 5 open-source deep-learning algorithms for recognition and matching experiments, resulting in a 30% improvement in data quality and a 25% reduction in dataset size.
- Designed and developed automated Python tools that increased image recognition efficiency by 40%, eliminating 95% of redundant images and enhancing overall dataset quality by reducing noise by 35%.
- Improved image recognition model accuracy by 22% through our custom program, streamlining models to reduce computational requirements by 15% while increasing the precision of data-driven applications from 83% to 91%.

Tech Instructor May 2023 – Aug 2023

Building 21 *Philadelphia, PA*

- Instructed Python programming to over 50 underprivileged students in Philadelphia, achieving a 100% course completion rate and a 30% increase in students expressing interest in tech careers.
- Led the "Launchpad" program, guiding 50+ high school students in building successful tech career paths, resulting in students applying for STEM programs.

Software Developer and Penetration Tester Oct. 2021 – July 2022

Eminence Ways *Kathmandu, Nepal*

- Devloped an audit and asset management systems for 3 government agencies and 2 banks using Django and React.js, featuring responsive UIs with Material-UI, real-time D3.js visualizations, RESTful APIs, optimized PostgreSQL databases, and all containerized in Docker.
- Conducted penetration tests on 15 mobile apps and 20 web applications, identifying an average of 12 critical vulnerabilities per application and reducing security risks by 75%.

Additional Leadership Experience

- President, Villanova Software Engineers: Lead a community of 20+ student developers, developing projects and hosting technical workshops
- Lead Developer, HackNepal: Designed and deployed PYsecure, a custom Python/V8 browser with advanced security features, resulting in 70% improved threat detection across 8 major organizations in Nepal
- Student Lead, Classroom Technologies: Manage and maintain technology infrastructure across 50+ classrooms
- Captain, Villanova Cricket Club: Lead 25-member team, organizing games, game watch and playing for fun.

Technical Skills

Languages & Tools: Python, Java, JavaScript, Swift, React, Django, Flask
Web & Cloud: HTML/CSS, RESTful APIs, MySQL, AWS, Firebase
ML/AI: TensorFlow, Keras, OpenCV, NLTK