Yuvraj S. Chahal

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EDUCATION

University of Illinois at Urbana-Champaign (UIUC)   **Champaign, Illinois**
B.S. in Computer Science + Economics   *Expected Graduation, May 2026*
- o   **GPA:** 3.80/4.00, *Dean's List*
- o   **Related Coursework:** Data Structures & Algorithms, Applied Machine Learning, Algorithms & Models of Computation, Computer Systems, Database Systems, Discrete Math, Prob. & Statistics for CS, Linear Algebra

EXPERIENCE

Zolon Tech, Inc.   **Reston, Virginia**
Software Engineering Intern   *June 2024 – Present*
- ● Engineered and deployed python **AWS Lambda functions** using Amazon **Textract** for **optical character recognition (OCR)**, processing and storing JSON data in Amazon **S3**, improving document digitization efficiency by ~30%.
- ● Developed **REST APIs** to integrate OCR Lambda functions with **ServiceNow**, streamlining document processing workflows for the Administration for Children and Families.

Sunrise Valley Dental   **Reston, Virginia**
Office Assistant/Intern   *May 2023 – Aug 2023*
- ● Used experience in web development to create a form on the company's website allowing patients to request appointments online instead of only over the phone. Increased productivity of existing staff by 20%.
- ● Boosted soft skills by assisting patients with check in/out, taking phone calls, and making appointments.

University of Illinois at Urbana-Champaign (UIUC)   **Champaign, Illinois**
Computer Science Course Assistant   *Jan 2023 – Dec 2023*
- ● Hosted one-on-one office hours helping students debug/test their code, as well as explain complex conceptual topics.
- ● Assisted 100+ students overcome technical challenges regarding homework, projects, quizzes, etc.

PROJECTS

Neural Network from Scratch
- ● Designed a **neural network** from scratch using **PyTorch** to play Pac-Man
- ● Developed a **deep convolutional Q-learning agent** with multiple **convolutional layers, batch normalization, and fully connected layers**, leveraging experience replay and target networks for stable and efficient learning.
- ● Fine-tuned hyperparameters such as learning rate, discount factor, and epsilon decay, employing **Adam optimizer** and **mean squared error loss** for optimal Q-value estimation.

HackIllinois 2024 Hardware Hack
- ● Engineered a robot using Raspberry Pi winning **2nd place** at HackIllinois, the **largest hackathon in the Midwest**.
- ● Designed and implemented **autonomous navigation** logic in Python, incorporating **state machine principles** for dynamic behavior adjustment in real-world conditions.
- ● Utilized **OpenCV** for **real-time image processing**, enabling the robot to follow paths and detect/avoid obstacles using **color filtering and contour detection** techniques.

TwitterNLP
- ● Developed a Python-based **sentiment analysis tool** to scrape tweets from certain users, search terms, or hashtags.
- ● Utilized the advanced RoBERTa model, an evolution of Google's BERT, for **natural language processing**, accurately categorizing tweets into positive, neutral, and negative sentiments.
- ● Implemented **data visualization** using **Plotly**, showcasing sentiment trends over time and enabling detailed analysis through user-interactive features.

Illini Rideshare
- ● Created a web application using **React.js, Node.js**, and **HTML/CSS/JS** for university ridesharing.
- ● Integrated **Microsoft's Authentication Library** for secure access, restricting sign-in to University of Illinois students.

SKILLS

Programming: Java, Python, JavaScript, HTML/CSS, SQL, Node.js, React.js, C++, C, R
Tools: Git, Scikit-learn (sklearn), PyTorch, OpenCV, Pandas, NumPy, Matplotlib, AWS, Docker, Linux, Flask, Android Studio, Eclipse, Jupyter