KAJAL PATEL

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Education

University of Illinois at Urbana-Champaign — **Expected Graduation: May 2026**
Bachelor of Science in Computer Science, *Minor in Statistics, Minor in Psychology* — *GPA: 3.97 / 4.00*

Relevant Coursework

- Applied Machine Learning
- Computational Photography
- Algorithms
- Artificial Intelligence
- Deep Learning for Computer Vision
- Programming Languages
- Numerical Methods
- Statistics & Probability
- Data Structures
- Database Systems
- Linear Algebra
- Computer Architecture

Skills

Technical: Python, Java, C++, SQL, R, C, Numpy, Neo4J, MongoDB, LangChain, Tensorflow, Pytorch, Matplotlib, Pandas, Scipy, JavaScript, HTML/CSS
Spoken languages: English, Hindi, Spanish, Gujarati

Research and Work Experience

Perception and Language Lab *(Advisor: Dr. Ismini Lourentzou)* — **August 2024 – Present**
National Center for Supercomputing Applications Research Intern — *Urbana-Champaign, IL*
- Develop vision-language models for open-vocabulary scene graph generation, focusing on unseen objects and relationships.
- Architect new datasets of entities in a scene and object-relation labels with greater detail than the state-of-the-art.

Center for Exascale-enabled Scramjet Design — **May 2024 – Present**
National Center for Supercomputing Applications Research Intern — *Remote*
- Investigate array-based program transformations and optimizations in high-performance computing applications.
- Trace and unpack computations through directed acyclic graphs mapping static control programs with array input.

Sandia National Laboratories — **May 2023 – Present**
Applied Machine Intelligence R&D Intern — *Albuquerque, NM*
- Formulate exhaustive evaluation framework for DOE-funded climate research RAG-based large language model.
- Devise GAN and neural radiance field-based model to construct 3D CT scans from X-ray images using attenuation response.
- Experiment with natural language processing and metrics like latent dirichlet allocation to measure similarity in corpora of text.
- Build voice-activated large-language model assistant to identify and converse about objects in VR space.
- Create machine learning model to enhance resource allocation for high-performance computing jobs.

Software R&D Intern
- Restructured the queuing and processing mechanism for satellite data streams, ensuring handling without overloading.
- Designed CI/CD version control pipeline to generate live changelogs in a conventional commit structure upon changes to a repository.

Assessments Dynamics & Retention *(Advisor: Dr. Geoffrey Herman)* — **August 2022 – Present**
Undergraduate Researcher — *Urbana-Champaign, IL*
- Lead NSF-funded experiment on impacts of frequent and second-chance academic testing on student learning retention.
- Explore how intrinsic motivation affects student performance by conducting experiments to investigate student behavior.

Statistics & Probability I, Numerical Methods, and Discrete Structures — **August 2023 – Present**
Course Assistant — *Urbana-Champaign, IL*
- Teach, hold office hours, and provide academic support to 1700+ students every semester across three core courses.

PeopleWeave, Caesar Research Group *(Advisor: Dr. Matthew Caesar)* — **March 2023 – December 2023**
Undergraduate Researcher, Team Lead — *Urbana-Champaign, IL*
- Spearheaded research and implementation of knowledge graph attention networks for academia-focused recommender systems.
- Held weekly team meetings and delivered progress reports to project managers and advisors.

Extracurricular and Leadership Experience

Girls Who Code — **February 2021 – Present**
Lead Facilitator, Founder of Chapter — *Urbana-Champaign, IL; Mundelein, IL*
- Create content for 100+ girls from grades 3-12 to code in Python, Java, HTML/CSS, and Javascript, teaching lessons for all levels.
- Coordinate students, parents, and 20+ facilitators to foster an inclusive and safe environment.

Projects

Reflections | Projections 2023 — **February 2023 – November 2023**
Analytics Lead & Software Developer — *Urbana-Champaign, IL*
- Crafted versatile attendance tracking system using Svelte and NestJS, used by 3000+ attendees and sponsors.
- Conducted behavioral data analysis on attendee demographics and movement, fostering R|P's data-centric approach.

Awards

Stamps Scholar — **Awarded April 2022**
- Received most prestigious and selective scholarship (four-year full-ride) at the University of Illinois at Urbana-Champaign.
- Selected on basis of leadership, academics, and service from amongst 475,000+ applicants.