Katyayani G. Raman

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Education

University of California, Santa Barbara — Sep 2020 – June 2024
B.S. Computer Science — *Santa Barbara, CA*

Experience

Student Researcher — Jan 2024 – June 2024
Cheadle Center for Biodiversity and Ecological Restoration, UCSB — *Santa Barbara, CA*

- Led a computer vision and machine learning project applying geometric morphometrics to automate wing landmark detection, demonstrating that wing-based models outperform full-body imaging for bee species classification.
- Reduced manual annotation time by over 70% by engineering a fully automated pipeline combining object detection and shape prediction for instant and accurate landmark marking.

Software Engineer Intern — June 2023 – Sep 2023
H2O.ai — *Mountain View, CA*

- Enabled daily real-time analytics for 100+ employees by developing and deploying an interactive sales metrics web app to the company app store using pandas, Salesforce data, and h2o-wave.
- Improved LLM evaluation coverage by 30% by creating automated evaluation and data pipelines with Postgres and FastAPI, including robust test sets and jailbreak detection benchmarks.

Projects

Logs: Versatile Journal App (Now available on the App Store) | *SwiftUI, CoreData* — Aug 2023 – Present

- Released as "iogs" on the App Store and enables focused daily logging with folders, tags, stamps, calendar/reminder integration, and smart search for seamless organization.
- Features secure on-device Core Data storage with biometric authentication, extensive customization (themes, fonts, layouts), multimedia support (GIFs, PDFs), entry replies to link related thoughts, and AI-driven journaling suggestions for guided reflection.

Ostinuto: Offline Music Player App | *SwiftUI, AVFoundation* — Aug 2025 – Present

- Built an offline iOS music player with playlist management, shuffle, queueing, infinite loop mode, and background playback designed for uninterrupted long-form listening.
- Added in-app recording and waveform visualization for creator-focused workflows. Currently in TestFlight and planned for release soon.

LessWrong iOS App | *SwiftUI, GraphQL* — June 2024

- Developed an iOS client for browsing, bookmarking, and sharing LessWrong posts and comments using dynamic GraphQL queries based on search text and tags.

Anidex: Animal Classification App | *CoreML, MapKit, SwiftUI* — Oct 2023 – Present

- Created an offline animal cataloging app using CoreML for multi-model image classification across 2,222 species, with geotagged sightings logged via MapKit.
- Designed a hierarchical model schema that follows biological taxonomy, where a top-level Phylum classifier (Chordata) routes images to specialized Class models (e.g., Mammal, Reptile) which then determine the animal's species.

LLM-Chat: Local and Remote LLM Chat App | *SwiftUI, AppKit, FastAPI* — July 2023 – Sep 2023

- Built a macOS chat app with an iMessage-style interface that enables seamless interactions with both local and remote language models via a FastAPI backend, with on-device models optimized for Apple Silicon.

Scalable Cognitive Simulations with Hybrid LLMs | *Python, LLMs, FastAPI* — Feb 2024 – Mar 2024

- Extended the generative agent simulation framework (Park et al., 2023) by integrating both local and cloud-based LLMs through an adaptive cognitive architecture that dynamically routes tasks by complexity, significantly reducing cloud dependency while preserving both individual and emergent agent behaviors.

CNN Ensemble Classifier | *Python, TensorFlow, Keras* — Mar 2023

- Engineered a CNN ensemble achieving 93% accuracy on 10 clothing categories by combining multiple architectures with performance-weighted voting.
- Trained and evaluated the ensemble on a 60,000-image dataset, focusing on preprocessing, train and validation splits, and robust metrics tracking for model comparison.

Named Entity Recognition with CRF | *Python, CRF* — June 2023

- Built a Conditional Random Field model for NER on bilingual Twitter data, leveraging contextual and lexical features.
- Utilized capitalization, gazetteer lists, and Boolean features to improve entity detection accuracy.

Advanced Compiler | *C++, Flex, Bison* — May 2022

- Built a compiler supporting abstraction, inheritance, memory management, and data structures with type checking.
- Implemented tokenization with Flex, AST translation with Bison, and x86 assembly code generation for effective compilation.

Technical Skills

Languages: C++, Python, Swift, C, Objective-C, Java, C#, JavaScript, HTML, CSS, SQL, GraphQL
iOS and Apple Frameworks: SwiftUI, UIKit, AppKit, CoreData, CoreML, ARKit, HealthKit, CloudKit, MapKit
Data Science and ML: NumPy, pandas, OpenCV, TensorFlow, PyTorch
Web / Backend: HTML, CSS, JavaScript, REST APIs, FastAPI
Tools and Environments: Xcode, Git, Docker, Unix/Shell, Visual Studio Code, Emacs