

# Varun Patil

[varunpatil@ucla.edu](mailto:varunpatil@ucla.edu) | [varunpatil.me](http://varunpatil.me) | [github.com/pulsejet](https://github.com/pulsejet)

## EDUCATION

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### University of California, Los Angeles

*Ph.D. Candidate, Computer Science (Advisor: Lixia Zhang)*  
*M.S. Computer Science*

California, USA  
*Dec. 2020 – present*  
*Sep. 2020 – Dec. 2021*

### Indian Institute of Technology Bombay

*B.Tech. Mechanical Engineering*  
*Minor in Computer Science and Engineering, Institute Technical Roll of Honour*

Mumbai, India  
*Jun. 2016 – Aug. 2020*

## EXPERIENCE

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### UCLA

*Graduate Student Researcher – Internet Research Laboratory*

Los Angeles, California  
*Apr. 2021 – present*

- Conducting research on Named Data Networking with focus on distributed data synchronization protocols

#### Selected Publications

- **Patil**, Desai, Zhang, 2022. *Kua: A Distributed Object Store over Named Data Networking*. ACM ICN '22
- Moll, **Patil** et al. 2022. *The Evolution of Distributed Dataset Synchronization Solutions in NDN*. ACM ICN '22
- **Patil**, Song, Xiao, Zhang, 2022. *Scaling State Vector Sync*. ACM ICN '22
- Moll, **Patil**, Zhang, Pesavento, 2021. *Resilient Brokerless Publish-Subscribe Over NDN*. IEEE MILCOM '21
- **Patil**, Moll, Zhang, 2021. *Supporting Pub/Sub over NDN Sync*. ACM ICN '21
- Moll, **Patil**, Sabharwal, Zhang, 2021. *A Brief Introduction to State Vector Sync*. TR-NDN-0073
- Authored the reference implementation of the State Vector Sync protocol
- Implemented a network and security simulator-visualizer ([NDN-Play](#)) for running experiments in the browser

### LabN Consulting, L.L.C.

*Software Engineering Intern – LCPS*

North Bethesda, Maryland  
*Jun. – Sep. 2022*

- Worked on porting a legacy implementation of the RSVP-TE protocol to the FRRouting software suite
- Ported the legacy code and tests to run on 64-bit hardware and implemented shims for integration with FRR

### IIT Bombay

*Software Architect & Developer – Single Sign On, Computer Centre*

Mumbai, India  
*Sep. 2019 – Sep. 2020*

- Drafted a policy framework for enforcing multi-factor authentication on a diverse 10000+ organization
- Implemented an OAuth2/OIDC/SAML provider for authorization over LDAP-TOTP-FIDO authentication
- Implemented a very high performance geolocation provider ([GeoIPNS](#)) for suspicious activity detection
- Authored popular open source plugins for migrating [Nextcloud](#) and [Roundcube](#) webmail to OpenID Connect
- Conceptualized and developed Android and iOS clients for secure user-initiated passwordless authentication
- Integrated authentication with SAML federated identity for Azure Active Directory and Google Workspace

*Institute System Administrator & Developers' Community Overall Coordinator*

*Apr. 2019 – Jun. 2020*

- Led the community of software developers at the institute comprising of a 3-tier technical student team
- Administered the student datacenter hardware infrastructure and migrated from virtualization to LXC
- Developed a secure solution to digitize workflows in a decades-old system in emergency response to COVID-19

*Undergraduate Researcher*

*May – Jul. 2018*

- Worked on data processing and neural net architecture for correcting grammatical errors with deep learning

### Mercari, Inc.

*Backend Software Engineering Intern – Product Catalog*

Tokyo, Japan  
*Jul. 2019*

- Worked in an agile team to develop an industry-grade management tool for an arbitrarily large dataset
- Set up continuous integration and deployment over Kubernetes using CircleCI and Terraform

## SOFTWARE PROJECTS

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**Memories** | *PHP, Vue.js* | 800+ GitHub stars

2022 – 2023

- Efficient and feature-rich photo management app for Nextcloud, supporting large media libraries
- First FOSS self-hosted photo manager to have all basic features of commercial alternatives

**Imperials** | *Golang, React*

2021 – 2022

- Free (and ad-free) web alternative to the Settlers of Catan board game with beautiful graphics

**InstiApp** | *Django, Angular, Android, Flutter*

2018 – 2020

- Open source university student activity platform for events, organizations, news, food, maps, etc.
- Basic functionality covers notifications, a search engine and hierarchical permissions and access control
- More advanced features include event advertisements to targeted groups, users interests, achievements etc.
- The project uses 8+ programming languages, supports all major platforms and has 100% backend test coverage
- I led the original team of 10+ developers, and the IIT Bombay deployment had 8000+ active users in 2020

**MKXP Ports** | *Ruby, C++, GLES, Java, WebAssembly*

2015 – 2019

- Eight Windows games ported to Linux, macOS and Android using a popular open source engine
- Ported the GLES game engine to the web with Emscripten and adapted for asynchronous asset loading

## TECHNICAL SKILLS

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**Advanced:** JavaScript/TypeScript, Python, C++, Golang, Docker, Git

**Intermediate:** C#, Ruby, Java, PHP, C, Lisp, Lua, Kubernetes