

Anup Bishnoi

Technical Lead/Architect

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Experience Summary

- Focus on Getting Things Done™
- Leading remote teams is fun
- Problem solver, both human and technical kind
- MLOps, Labeling Infra for Autonomous Driving
- Augmented Reality, 3D Graphics
- Open Source contributor, Math Teacher
- Indie Game Developer

Work Experience

Sr Software Engineer, Aurora (Sep 2019 - Present)

Leadership

- Led end-to-end infrastructure migration from custom npm/bash-based tooling to Bazel+Jenkins for building, running, and testing frontend projects across the company, including 4D labeling, AV log replay, Sim creation.
- Led a team of engineers tasked with migrating all UI apps and shared projects off of Webpack TypeScript tooling to Bazel-rules for TypeScript compilation. Achieved drastically better Jenkins CI build times and faster local builds in the process.
- Led infrastructure and build support for 50+ developers, guided the team through the explosion of frontend apps after Aurora+ATG merger.

Infrastructure & Tooling

- Implemented hermetic and incremental builds for UI projects, introduced CI builds, improved debugging.
- Implemented Yarn workspaces-like functionality to manage cross-project, third-party, WebAssembly, and protobuf dependencies for UI projects via Bazel.
- Educated and trained engineers on Aurora-specific monorepo build infrastructure.

Machine Learning, 3D Graphics

- Implemented web-based video game-like viewer for raw as well as processed AV (Autonomous Vehicle) log snippets, showing collected sensor data per trip, visualizing Lidar point clouds, on and off-road actors, and vehicle controls.
- Worked on labeling and training data pipelines to improve 4D labeling.

Sr Software Engineer, Netflix (Aug 2017 - Sep 2019)

Client-side:

- Core contributor to Falcor, a Netflix alternative to GraphQL, used internally in all Netflix apps.

- Collaborated with partner teams to define client-server data access patterns at Netflix scale.
- Created Falcor DevTools for HackDay, to provide visibility into Falcor's internals for developers.
- Prototyped evolution of Falcor data access API to enable dynamic data discovery, ala GraphQL.
- Helped netflix.com website modernize its Falcor usage, leading to 20% jank reduction.

Server-side:

- Helped incubate Edge PaaS, the new mid-tier tech stack to replace all client-server requests for all Netflix apps.
- Iterated on network architecture for Edge PaaS with the Incubator team, solving for the N+1 network request problem.
- Migrated existing Netflix iOS backend services to new Falcor Router, testing with real-world production data, including fixing edge-cases that appeared beyond 100k+ runs of shadow testing on real user requests.

Graphics:

- Contributed to the next evolution of low-level in-house Graphics API used in all Netflix TV apps.
- Created prototypes to demo 3D visual interface ideas for Netflix TV app.
- Built a React API to access low-level imperative graphics API in a declarative way.
- Supported 70+ TVUI developers in their usage of TV Animation subsystem.
- Helped evolve TVUI Animation API to be much more flexible, ergonomic, and less error-prone.

Technical Lead/Manager, Blippar (Jan 2016 - Aug 2017)

Leadership:

- Led Blippar App team, a geographically distributed 8-engineer team.
- Led the team to develop & launch Blippar Halos, Augmented Reality face profiles for everyone.
- Led Augmented Reality exploration, turning Blippar app UI itself into an AR experience.

3D & Augmented Reality:

- Worked on BlippBuilder, web-based AR content creator.
- Helped create BlippBuilder Script, a general-purpose JavaScript Augmented Reality SDK.
- Created internal 3D asset & scene description format for universal AR content.
- Implemented 3D converter for FBX file conversion to internal proprietary format.
- Prototyped company's first multiplayer AR game.

Full Stack

- Implemented multiple full stack apps using Node, Python, React, Flask, JavaScript, CSS3, Canvas, WebGL.
- Implemented real-time features for long-living backend tasks with Server-sent events for [FBX Converter app](#).

DevOps/Tooling/Big Data:

- Implemented and evangelized internal DevOps infrastructure using Drone, Docker, and Rancher.
- Created and maintained private NPM registry for JavaScript modules.
- Created and managed a Big Data pipeline for ingesting 50GB worth of data every day using AWS infrastructure.
- Created command-line tools and live-editing app for coding interactive AR experiences using Electron & NodeJS.

Technical Architect, Nagarro Software Pvt Ltd, Nagarro Inc (July 2012 - Jan 2016)

- Led a team of 5 engineers to build hybrid mobile apps for rough on-site use.

- Provided company-wide architectural solutions & high-touch support to teams across product domains.
- Led Nagarro Technology Exploration Group (NTEG) to build bleeding edge prototypes like peer-to-peer video chat, real-time chat backend, WebGL games, and Hand motion-driven interfaces for desktop.
- Built front-end applications using HTML5, CSS3, ES6, JavaScript, AngularJS, Bootstrap, WebRTC, and WebSockets.
- Built mobile applications with Adobe Phonegap, iOS (Swift), and Android.
- Built real-time servers with Node.js, Socket.io, Firebase, and backends with Java, JSP/Servlets.
- Created Clay, a client-side framework using BackboneJS & RequireJS which found company-wide use.

Software Developer, Lattice Purple (August 2010 - July 2012)

- Designed and implemented product features using HTML, JavaScript, CSS, Dojo, SQL, Groovy on Grails.
- Actively contributed to internal and external product demos

Open Source & Other Contributions

- Implemented NLP model to convert text comments to working Regular Expressions
Built on existing research from 2016, implemented research paper in Python using Tensorflow, Spacy, SeqToSeq
<https://arxiv.org/abs/1608.03000>
- Created Augmented Reality Drum Set app that you play with your full body
Used Body Pose Tracking data, captured per frame, and translates it to gestures which play music
<https://www.linkedin.com/posts/activity-6749585267243532288-pkSI>
- Created Storytelling experiences in Augmented Reality using Face & Body pose gestures
Implemented gesture recognition with a novel 4D body pose data clustering approach
<https://twitter.com/methodiva/status/1280732116347547648>
- Created baby-cry classifier that predicts a baby's mood/emotion based on her cries
Moods/emotions can be: Angry, Hungry, Troubled, Happy, Satisfied
- Organizer of Node.js Dilli, a 3000+ member community of Node.js enthusiasts in India
Organized many successful events and mini-conferences. Presented talks frequently.
<https://www.meetup.com/Node-js-Dilli/>
- Podcast appearance(s)
Frontend Happy Hour - Falcor, modeling our drinks
<http://frontendhappyhour.com/episodes/falcor-modeling-our-drinks/>
- Created Apper, a real-time Node.js web framework
Web app framework with hierarchical REST endpoints using file system hierarchy, and namespace-scoped real-time functionality.
Download >20,000 times from NPM.
<https://github.com/asyncanup/apper>
- Contributed to SocketIO
Found and fixed a socket namespace bug, merged in core
<https://github.com/socketio/socket.io/commits?author=asyncanup>
- Contributed to Three.js
Fixed bugs with FBX converter using FBX python sdk
<https://github.com/mrdoob/three.js/commits?author=asyncanup>
- Won Best Game at DevCamp SF Hackathon 2017 using AR & AI
Created a mobile scrabble game where you scan real-world objects to choose new letters, using image recognition
<https://devca.mp/anything-is-possible-62387622a4a6>

- Created moodJ, an AI chatbot that plays music based on conversation in Slack channels
Presented at Google's hackathon, useful in corporate and other team environments
<https://vimeo.com/212540199>
- Presented at conferences and meetups
Implementing Service Discovery in 100 lines of Node.js, at DeveloperWeek 2018:
<https://developerweeksfbayarea2018.sched.com/event/CdpW/>
Introduction to Node.js - Core Concepts: <https://vimeo.com/97735499>
Presented Apper at JSChannel 2013, India's largest JavaScript conference (video not available)
- Organized & conducted Nagarro Techfest with 100+ participants
Organized, planned &, conducted Techfest with competitions to explore and utilize the capabilities of quadcopter drones.
Also prepared and conducted a 5-part training course for all participants to learn drone programming.
<https://vimeo.com/84047160>
<https://vimeo.com/album/2635251>
- Conducted HTML5 training workshops with 50+ members over 8 sessions
Prepared, conducted, and evaluated 3-month HTML5 training course. Training videos were used to teach future batches as well.
Practical HTML5: <https://vimeo.com/album/2621244>
JS/HTML5 Tech Talks: <https://vimeo.com/album/2621247>
- Created multiplayer real-time game with Parrot AR Drone
Played by approximately 50 people together, created and conducted the game as part of training for Nagarro Techfest 2017
<https://vimeo.com/80988309>

Academics

- **Master of Technology**
Industrial Engineering & Management, Indian Institute of Technology, Kharagpur
Projects:
- ERP Information System Project - grade A
- An Online Representation for Information Representation using Information Graph - grade A
- **Bachelor of Technology**
Industrial Engineering & Management, Indian Institute of Technology, Kharagpur
Coursework:
- Programming and Data Structure (Semester II) - grade EX (perfect score)
- Information Systems I (Semester III) - grade A
- Computer Software (Semester V) - grade A
Project:
- An approach to building Natural Language-based Information Systems - grade A