Nagarajan

I have deep interest in Computer Science and Mathematics, and I love solving challenging problems & delighting clients. I create solutions combining skills from frontend, backend, algorithms and graphics to dazzle customers. I am looking for a Tech Lead / IC role with a strong impact.

Skill overview

- **Frontend:**
  NEXT.js, React, TypeScript, JavaScript, HTML, CSS, ThreeJS/OpenGL

- **Backend:**
  Python, Flask, Django, SQL, MongoDB, Cassandra, NGINX, C

- **Others:**
  Networking, HTTP, EmberJS, D3js, Grafana, Kibana, Mode, K8S, A11Y

Educational Background

- **M.S. - Stanford University**
  Computational and Mathematical Engineering (iCME), Dec 2009

- **B.Engg. - Delhi Institute of Technology**
  Instrumentation and Control Engineering, June 2002

Work Experience

- *Lead Engineer*   July 27, 2020 - Current
  Lyft Inc, SF, California

- *Senior Software Engineer*   February 16, 2010 - March 27, 2020
  Ciena / Cyan (Ciena acquired Cyan in Aug 2015), SF, California

- *Software Design Engineer*   July 01, 2002 - June 06, 2007
  Texas Instruments, Bangalore, India

Lyft projects

- **Lyft's Online Support Web portal**
  Tech Lead of a team of 4 which created Lyft's help web portal - https://help.lyft.com - on Lyft's internal tech infrastructure (previously hosted on Zendesk). It was built using NEXT.js (React, TypeScript), Python and Contentful. Designed, specced and implemented the solution and worked with cross-functional teams to deliver the product in a timely manner. Earned a merit bonus for ownership and execution on this project.

Ciena/Cyan Projects

- **3D Network Map**
  In a team of two, we developed a 3D Graphical front end for the network management client. Working in Python and OpenGL, I developed higher level abstraction layers (graphical objects for the 3D viewer) over OpenGL primitives. I also developed tools for multi layered visualization of network services. Later, I was the lead developer for the project to port this work to a web browser based front-end using EmberJS and ThreeJS.

- **Trail Analyzer**
  Network service providers had long requested better tools to efficiently debug network problems (they still do so). To solve a frequently faced issue of discovering root cause on disrupted services, I developed a tool - Trail Analyzer - to visualize a network service from end to end, while displaying live status information from all network devices that it passes through and

highlighting any issues on each of those. This tool was highly appreciated by the customers and saved them significant time in debugging problems.

- **Large graph visualization**
  As networks grew larger, it became ineffective to visualize the whole network all at once. I developed a novel algorithm to effectively visualize large sparsely connected graphs. I also developed a client-server protocol to efficiently transmit relevant parts of the network graph, and updates, between the back-end and the UI. I filed a patent for Network Visualization System and Method based on this work.

- **Hiring screening tool**
  I created a web application for the hiring team at Cyan to screen prospective employees. Using this app, the hiring team could email homework problems to applicants. The recipient could then work on the problem on their own time and submit the solutions into the app (online code editor for C and Python). The app would run linting checks and automated tests to rank and rate the submission, and send emails to notify the hiring team of submissions. The project was made using Python, Flask, SQL and React / Javascript.

Stanford University Projects

- **Cloth Simulation**
  Wrote a cloth simulation framework in C++, which solves a partial differential equation based on the physics of the cloth (Baraff and Witkin, 1998, *Large Steps in cloth simulation*). The implicit solver uses the conjugate gradient iterative algorithm at every step and also takes friction into account while interacting with objects in the environment.

- **Optimization - Brachistochrone**
  Implemented a numerical optimization tool in Matlab and used it to solve the brachistochrone problem (the path of least time for a particle under the effect of gravity). The tool implemented the linesearch using gamma conditions and BFGS based direction.

Texas Instruments Projects

- **Pocket Imager Handheld Projector - DLP Group, Texas Instruments**
  Joint effort between TI and Samsung, the DLP technology based Samsung Pocket Imager (P300 model) was the smallest and world's first LED based projector. I implemented new modules for controlling the LED driver, characterizing LED output color and dynamic feedback control of White Point. I also closely assisted Samsung in South Korea to solve critical last minute issues and bring the product to market in time and preventing release slippage. Received the **DLP Silver Olympian** award for execution - awarded to top 3% of DLP employees worldwide.

- **DSL modem firmware - ADSL Group, Texas Instruments**
  Our team modified an existing TI DSL implementation to work in the Japanese ISDN noise environment and to interoperate with existing third party solutions. I worked on the Handshake, Power Spectrum Management and Dynamic rate adaptation modules over a 2 year period.

Contact

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Visa Status	H1B sponsorship required, I-140 already approved