

PIYUSH AHUJA

Professional website: <http://piyushahuja.net>

SUMMARY

Digital Tech Leader with a background in software engineering, product management and computer science research (artificial intelligence, approximation algorithms). More than seven years of experience working with digital technologies.

RECOGNITION AND AWARDS

- Tiara Special Grant
- Ashtiany Collection Prize
- Harris Manchester College Second Degree Scholarship
- K.C. Mahindra Scholarship Award
- Mrs. Chander Kanta Nanda Excellence Award

IN MEDIA

- Tech Grandmasters Season 2 (2 episodes) on NDTV Good Times
- Tech Grandmasters Season 1 (6 episodes) on NDTV Good Times

EDUCATION

Second B.A. in Philosophy, Politics and Economics (PPE) University of Oxford (2014 – 2016)
Five-Year Integrated Masters in Mathematics and Computing IIT Delhi (2008 – 2013)

WORK EXPERIENCE

Senior Software Developer Human Genetics Informatics	Genome Research Limited	Cambridge, UK 2019 – Current
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- Openstack Report: Developed a web dashboard to report on usage of clusters on Sanger's on-prem Cloud using Python, AIOTTP and Vue.js
- Docker Swarm Provisioning: Internalized and extended a provisioning codebase to automate provisioned of docker swarm clusters using Ansible, Terraform, Python and Docker.
- Crook/Vault: Developed CLI software which enables the automation of our data governance policies and supports archival of data to iRODS as part of a cron job.

Founder and CTO	Platonix	2017 – Present
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- Built the first MVP of a native Android application for P2P learning using Express + Node.js + MongoDB backend and JSON-based RESTful APIs.
- Built a unit and integration testing frameworks using Mocha, Chai, Chai-HTTP, and Sinon.
- Hired and managed a team of three to ship v2 and v3. Launched the application with an initial user base from friends, family and students from Delhi colleges.
- Pivoted to a v4 (Digital Social Network of Teachers and Learners) to launch in Cambridge

Product Manager**Jugnoo, India****2016 – 2017**

- Shipped features for Jugnoo, an on-demand mobile application used by more than 3 million consumers for on-demand rides, food delivery and grocery delivery in 38 cities in India. Grew from managing a team of five to a team of fifteen employees, including developers, designers, QA engineers and junior product managers.
- In-house meals delivery vertical: Piloted Instant Delivery (within 20 mins) model for operational profitability
 - Launched product features: (1) Early Bird Discount (2) Bookmark favourites (3) Meals Traffic Controller (4) Menu planner.
 - Doubled Orders/day (250 to 500); kept SLA above 80%; unit profits margin improved from 4% to 23
- Piloted Star in Chandigarh: Jugnoo's subscription feature offering free delivery and cashbacks for consumers
 - Launched with day-one hypothesis on pricing & benefits; iterated based on data & customer feedback.
 - Grew subscriber base to 65 subscribers; monthly retention 6.96%; avg. ROI Rs. 236/mo monthly subscriber.
- Launched the new verticals: (1) AskLocal: a QnA platform, and (2) Jugnoo Pros: an on-demand service provider. Grew AskLocal's user base from scratch to 3000+ users, with a DAU/MAU of 5.68%.

Energy Modelling**Aurora Energy Research, Oxford****2015 - 2016**

- Built a comprehensive excel model that forecasts renewable electricity surcharge on German consumers for the next 20 years using publicly available datasets and a detailed understanding of German energy policy
- Optimized the data cleaning and loading process by using R script in sync with SQL engine, achieving a speed-up of 7200%
- Delivered critical excel models and forecasts under strict time constraints for Aurora's November launch in Germany

Analytics Specialist**Opera Solutions LLC, India****2013 –2014**

- Quantified impact of Hurricane Sandy on US Bond Markets using *Monte Carlo simulations* and data from Hurricane Katrina.
- Managed database of cloud-based SaaS platform (Mobiuss) enabling risk analysis, valuation & stress testing in RMBS market

TECHNICAL

Skills: DevOps, Web Development, Artificial Intelligence, Algorithms

Languages: Python, Javascript, Java, Terraform, Ansible, Bash, Docker

Tools/Frameworks: Node.js, ReactJS, Express, aiohttp, MongoDB, postgres, nginx

Github: <https://github.com/piyushahuja>

RESEARCH EXPERIENCE

Artificial Intelligence and Society

[Man and Machine: Questions of Risk, Trust and Accountability in Today's AI Technology](#)

Accepted for publication (subject to revisions) in Bulletin of Science, Technology and Society

Approximation Algorithms

[Approximation Algorithms in Network Design](#) (Master's Thesis)

Problems combining facility location with connectivity requirements are fundamental in network design. In this thesis, we investigate the Connected Facility Location (CFL) problem through the non-trivial special case of Single-Sink Rent-or Buy (SROB) problem. We develop two approaches for this problem, and illustrate the limitations and promises of both. Our first approach is based on a natural linear program for SROB. Till date, no algorithm based on this linear program is known. We sketch an algorithm which performs well in many instances of the problem, but runs into trouble for certain pathological cases, which we illustrate. Our second approach borrows ideas from the dual fitting algorithm for metric uncapacitated facility location by Jain et al. (called JMS algorithm), and combines it with the Goemans-Williamson moat growing procedure. This approach aims to neutralize the slack in the Goemans-Williamson argument with the one associated with the JMS procedure, and thus holds a lot of promise for achieving an overall 2-approximation for CFL. Apart from these two approaches, we investigate the scope for improvement in the 4.55- approximation algorithm due to Swamy and Kumar, which gives the current best primal-dual based performance guarantee for SROB. We illustrate a very simple instance where the algorithm produces a 3-approximation, thus giving a lower bound on the performance guarantee for that algorithm

Economics of The Internet

[Congestion Based Financial Instruments for the Internet Economy](#) (Economics Thesis)

Could market mechanisms be employed to tackle or relieve Internet congestion? We look at three market mechanisms: consumer-side congestion pricing, content-side paid prioritization, and bilateral risk sharing agreements. While the former two have been heavily studied in economic literature, the risk sharing approach towards congestion is a novel addition of this thesis. We treat the uncertainty in broadband congestion levels as an economic risk that consumers and Internet businesses are forced to bear. The thesis investigates the possibility of introducing congestion-based financial instruments, similar to derivatives in a stock market, that efficiently allocate risk borne out of congestion.