Hans B. DeJong

Menlo Park, CA • hansbdejong.com

Education

University of Pennsylvania Dec 2022
Master of Computer Science (MCIT), Grade: 4.0

- Relevant coursework: Distributed Systems, Database and Information Systems, Big Data Analytics, Artificial Intelligence, Networked Systems, Algorithms and Computation
- Completed additional graduate level computer science courses at Stanford: Web Applications, Computer and Network Security
- Selected to beta test and review a new course, Cloud Computing Technologies.

Stanford University Jan 2018
PhD Environmental Earth System Science, Grade: 3.96

Brown University May 2008
B.A Geology-Biology, Grade: 3.94

Skills

Programming Languages
Java, Python, JavaScript, C, C++, Go, Arduino

Databases
SQL, MongoDB, Neo4j

Web Technologies
React, HTML, CSS, Node.js, Express, D3.js, REST API, AJAX, Bootstrap, Material UI

Data Science
Apache Spark, Pandas, NumPy, Matplotlib, Scikit-learn, Apache MXNet

Cloud
AWS (RDS, EC2, EMR), GCP (Firebase)

Tools
Git, Vim, Linux, JUnit, Docker, GNU Debugger

Projects

Network Simulator Extension Jan 2023 - present

- Collaborated with a team of three to extend an open-source discrete-event network simulator to support two distributed routing protocols, link-state and distant-vector routing.
- Implemented error handling to ensure the routing protocol can handle situations when links break or new nodes are added.
- Built a Distributed Hash Table (DHT) as an overlay network layered on top of our routing protocol and implemented a distributed search engine application that uses our DHT.

Quaero Search Engine Nov-Dec 2022

- Collaborated with a team of four to develop and deploy a distributed Google-style search engine from scratch that returns relevant search results for user queries.
- Implemented a web server, key-value store, distributed analytics engine, web crawler, and indexer in Java and deployed the components on multiple AWS EC2 instances.
- Crawled and indexed over 200,000 web pages and built a ranker using page rank and term frequency inverse document frequency.
- Added bonus features such as phrase match, infinite scrolling, page previews, and weather search.

FIFA World Cup App Feb-Apr 2022

- Built a comprehensive FIFA World Cup Application with detailed match statistics and insights.
- Combined and cleaned match data from multiple sources for all World Cup matches from 1930 to 2014.
- Designed and built the frontend using React and Material UI and created a REST API to query a normalized SQL database hosted on AWS RDS.
- Added advanced filtering options and insights, such as player and team statistics, top scorers, and goal timing analysis, for deeper insights into World Cup tournaments.

Photo Sharing App Mar 2022

- Developed a full-stack photo sharing application using React, Node.js, and MongoDB.
- Implemented user authentication, image upload, comments, likes, and favorite photo lists.
- Designed a modern and intuitive user interface using Material UI.
- Followed RESTful API architecture for robustness and scalability.

Professional Experience

Software Engineer Jun-Aug 2022

Stanford University

- Developed a new Learning Management System for Code in Place, a free online Python course hosted by the Stanford Computer Science Department.
- Created an admin system using React and Firebase to manage 1,000 teachers and 10,000 students.
- Redesigned the learning center, consulting with instructors, designers, and online students.
- Implemented an intuitive user experience and progress tracking system for students.
- Built a rich text editor for instructors to add and edit course content.
- Contributed quality code and creative solutions to project success.

Science and Computer Science Teacher 2018-2020

American International School Chennai, India

- Created and designed a new computer science course for freshman and sophomore students based on Stanford's popular course CS 106A, Programming Methodologies.
- Collaborated with a Stanford professor to provide extra scaffolding and challenge problems, resulting in increased students' understanding of fundamental concepts.
- Fostered an inclusive classroom environment, integrating peer tutoring and group projects to enhance collaboration and teamwork skills.
- Led all students to build the game *Breakout*, demonstrating mastery of programming concepts, and supervised creative final projects where students designed and developed their own applications.

Postdoctoral Research Scientist 2018

Stanford University

- Conceptualized and led an innovative project to monitor coral reef health by building custom autonomous instruments.
- Secured a seed grant and then designed, built, and programmed automatic water samplers and pumping systems.
- Conducted extensive testing and calibration of the instruments, including deployment on coral reefs in the Indian Ocean, and published the designs in the journal HardwareX.
- Resulted in significant cost savings (commercial samplers cost $35,000, ours cost $3,000) that enabled the expansion of ongoing coral reef biogeochemistry studies.

Doctoral Candidate 2012-2018

Stanford University

- Received a prestigious National Science Foundation Graduate Research Fellowship to study the impacts of climate change on the Southern Ocean, Antarctica.
- Initiated, designed, implemented, and managed complex collaborative projects to completion, resulting in seven studies published in top peer-reviewed journals and oral presentations at major conferences.
- Processed terabytes of raw satellite data to create high-resolution composite images of the Antarctic shelf and developed innovative algorithms to identify frazil ice algal bloom hotspots.
- Built computer models to calculate instantaneous air-sea CO_2 flux rates using high-resolution underway datasets from 20 cruises, providing new insights into the global carbon cycle.
- Volunteered as an expert reviewer for the prestigious journals *Nature Geosciences* and *Geophysical Research Letters*.