

# Hans B. DeJong

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I am an aspiring software engineer with years of experience as an oceanographer and educator that allowed me to develop excellent analytical and communication skills. I recently attained a master's in the MCIT program from the University of Pennsylvania where I gained valuable experience and technical skills in distributed systems, databases, networking, web applications, cybersecurity, and artificial intelligence. I am seeking to combine my scientific and teaching experiences with my deepening understanding of technology to join a development team.

## Education

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<b>University of Pennsylvania</b> <i>Master of Computer and Information Technology (MCIT), GPA 4.0</i>	Dec 2022
<b>Stanford University</b> <i>PhD Environmental Earth System Science, GPA 4.05</i>	Jan 2018
<b>Brown University</b> <i>B.A Geology-Biology, GPA 3.9</i>	May 2008

## Projects

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<b>Quaero Search Engine</b> <ul style="list-style-type: none"><li>Built and deployed a distributed Google-style cloud-based search engine that interacts with users via a frontend and returns relevant search results for user queries.</li><li>Implemented a web server (Spark Java clone), key-value store, distributed analytics engine (Apache Spark clone), web crawler, and indexer from scratch in Java.</li><li>In a team of four, deployed our components on multiple AWS EC2 instances to crawl and index hundreds of thousands of web pages and built a ranker using page rank, term frequency inverse document frequency, and phrase match.</li></ul>	Nov-Dec 2022
<b>Photo Sharing App</b> <ul style="list-style-type: none"><li>Created a photo sharing application that supports all basic functionalities including the ability for users to log in and out, register, upload photos, comment on photos, like photos, and create a list of favorite photos.</li><li>Built the frontend with React following the model-view-controller decomposition, implemented capabilities to fetch data from a server with AJAX, and set up the database with MongoDB.</li></ul>	Mar 2022
<b>FIFA World Cup App</b> <ul style="list-style-type: none"><li>Developed a web application where users can view details about every World Cup match, search by player, team, and stadium, and gain insights such as top scorers and timing of goals.</li><li>Cleaned and merged datasets from multiple sources and then designed and created our SQL database that we deployed on AWS RDS.</li><li>Designed and built the frontend using React and Material UI and queried the database using a REST API.</li></ul>	Feb-Apr 2022
<b>Automatic Water Sampler and Pumping System</b> <ul style="list-style-type: none"><li>Designed, built, and programmed autonomous submersible multiport water sampler and autonomous underwater pumping system.</li><li>Deployed our instruments on coral reefs to monitor coral reef health and calculate net growth rates.</li><li>Published our designs in the peer-reviewed journal <i>HardwareX</i>.</li></ul>	2018

## Coursework

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| <ul style="list-style-type: none"><li>Internet and Web Systems</li><li>Networked Systems</li><li>Big Data Analytics</li><li>Artificial Intelligence</li><li>Computer and Network Security</li><li>Web Applications</li></ul> | <ul style="list-style-type: none"><li>Database and Information Systems</li><li>Algorithms and Computation</li><li>Computer Systems Programming</li><li>Introduction to Computer Systems</li><li>Data Structures and Software Design</li><li>Discrete Math, Probability, and Graph Theory</li></ul> |
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## Skills

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### Programming Languages

Java, Python, JavaScript, C, C++, Go

### Databases

SQL, MongoDB, Neo4j

### Web Technologies

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

### Data Science

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

### Cloud

AWS (RDS, EC2, EMR), Firebase

### Tools

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

## Professional Experience

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### Software Engineer

Jun-Aug 2022

*Stanford University*

- Built part of the new learning management system for Code in Place, a free online Python course hosted by the Stanford computer science department.
- Created the login page and admin system to manage 1000 teachers and 10000 students worldwide.
- Designed and implemented a new user experience for the learning center, where instructors can add and edit course content such as videos and readings using a rich text editor.

### Science and Computer Science Teacher

2018-2020

*American International School Chennai, India*

- Taught high school students the fundamentals of computer programming in Java.
- Collaborated with a Stanford computer science professor and designed my course off the first half of Stanford's CS 106A, *Programming Methodologies*, one of the most popular courses at Stanford.
- All students successfully built the game Breakout and completed a creative final project.

### Postdoctoral Research Scientist

2018

*Stanford University*

- Designed, built, and tested autonomous instruments to study the impact of climate change on coral reefs across the Chagos Archipelago in the Indian Ocean.

### Doctoral Candidate and NSF Graduate Research Fellow

2012-2018

*Stanford University*

- Build computer models, collected and analyzed field data, and processed large satellite-derived datasets to study the impacts of climate change on the Southern Ocean (Antarctica).
- Published 7 studies in top peer-reviewed journals.
- Presented findings at major conferences and volunteered as an expert reviewer for the journals *Nature Geosciences* and *Geophysical Research Letters*.