Hans B. DeJong, PhD

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Summary

I am launching a career change from earth science research to technology. I completed a PhD at Stanford University where I designed, implemented, and managed complex projects through completion. My research focused on the carbon system in the Ross Sea, Antarctica, which involved computer modeling and analyzing large satellite-derived and oceanographic datasets. Since pursuing my Masters in Computer Science, I have improved my technical skills through coursework and projects and am seeking an internship in software engineering.

Education

University of Pennsylvania expected 2023
Masters in Computer Science (MCIT), GPA: 4.0

- Courses: Introduction to Software Development, Mathematical Foundations of Computer Science, Introduction to Computer Systems, Data Structures and Software Design, Computer Systems Programming

Stanford University.
PhD Earth System Science, GPA: 4.1

- National Science Foundation Graduate Research Fellowship ($138,000)
- Courses: Statistical Methods in Engineering, Advanced Statistical Methods, Numerical Modeling, Vector Calculus

Brown University
B.A. Geology-Biology, GPA: 3.9

Skills

Programming Languages: Java, Python, C/C++, SQL, MATLAB, R, Arduino, HTML, CSS, JavaScript

Data Science: Data wrangling, data visualization, model selection, uncertainty and sensitivity analysis, Monte Carlo and bootstrap methods, hypothesis testing, extreme value analysis, time-series analysis, high dimensional regressions

General: Project management and implementation, public speaking, technical writing, literature synthesis

Field: 168 days at sea on research cruises in the Indian and Southern Oceans, scientific scuba diver (>400 dives), field work planning and logistics, scientific instrumentation

Professional Experience

American International School Chennai, Chennai, India 2018 - 2020
High School Science and Computer Science Teacher

- Collaborated with a Stanford professor to teach a Computer Science course based on CS 106A, taken by over 1000 students at Stanford each year
- Tasked with revamping Biology curriculum. With new curriculum, students developed in-depth understanding of content and refined key skills – communication, collaboration, inquiry, and problem solving
- Based on anonymous student surveys, >98% of my students agree with the following statements: I am taught to think critically, I am encouraged to challenge and extend my learning, my teacher is kind and understanding towards me, and my teacher models curiosity and passion for the subject matter
- Head coach for High School Varsity Boys Soccer

Stanford University, Stanford, CA 2012-2018
Postdoctoral Research Scientist (2018)

- Designed, built, and deployed underwater instrumentation across the Chagos Archipelago to monitor how remote coral reefs respond to climate change
- Expert reviewer for *Nature Geosciences* and *Geophysical Research Letters*

Doctoral Research Scientist (2012-2017)

- Built computer model to calculate air-sea CO_2 flux rates in the Ross Sea, Antarctica
- Analyzed 10 terabytes of raw satellite data to identify frazil ice algal bloom hot spots around Antarctica
- Led research program to determine ocean acidification state of surface waters in the Southern Ocean using high-resolution underway datasets
- Measured $\delta^{18}O$ of seawater samples using mass spectrometry to quantify oceanic freshening near Antarctica from ice sheet melt
- Presented at major scientific conferences and published research findings in top journals (>70 citations)

Projects

Automatic Sampler and Pump

- Designed and built autonomous submersible multiport water sampler and autonomous underwater pumping system that we deployed on coral reefs. Collaborated with research engineer on hardware and programmed the microcontroller
- Designs published in 2 peer-reviewed articles

Virtual Science Interactive Classroom resources

- Created interactive data visualizations based on peer-reviewed science for students to explore the carbon cycle

Sample Coursework Projects

- Implemented Merge Sort and QuickSort algorithms with Linked Lists in C++
- Implemented an end-to-end file compression and decompression tool using Huffman coding
- Wrote a program to find all the words on a given boggle board using recursive backtracking
- Designed and developed a Java application to analyze Covid data using N-tier architecture
- Built a reverse assembler in C that converts machine code into assembly

Publications

David A. Mucciarone, **Hans B. DeJong**, Robert B. Dunbar, Yui Takeshita, Rebecca Albright, and Keaton Mertz. Autonomous submersible multiport water sampler system. *HardwareX*, 2021.

David A. Mucciarone, **Hans B. DeJong**, and Robert B. Dunbar. Autonomous underwater pumping system. *HardwareX, 2020*.

DeJong, Hans B., Robert B. Dunbar, Evan A. Lyons. Late summer frazil ice algal blooms around Antarctica. *Geophysical Research Letters*, 2018.

DeJong, Hans B., and Robert B. Dunbar. Air-Sea CO_2 Exchange in the Ross Sea, Antarctica. *Journal of Geophysical Research: Oceans*, 2017.

Sarah K. Bercovici, Bruce A. Huber, **DeJong, Hans B.**, Robert B. Dunbar, and Dennis A. Hansell. Dissolved inorganic carbon in the Ross Sea: Deep enrichment and export. *Limnology and Oceanography*, 2017.

DeJong, Hans B., Robert B. Dunbar, David A. Koweek, David A. Mucciarone, Sarah K. Bercovici, and Dennis A. Hansell. Net community production and carbon export during the late summer in the Ross Sea, Antarctica. *Global Biogeochemical Cycles*, 2017.

DeJong, Hans B., Robert B. Dunbar, David A. Mucciarone, and David A. Koweek. Carbonate saturation state of surface waters in the Ross Sea and Southern Ocean: controls and implications for the onset of aragonite undersaturation. *Biogeosciences*, 2015.

Other

Interests: Soccer, backpacking, travel, juggling, magic tricks
Languages: French, Spanish, Tamil
Background: Born in the US and grew up in India and Madagascar; I have also lived in Mali and South Korea