Hans B. DeJong, PhD

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Summary

I am a Stanford trained scientist pivoting into tech. Collaborating with leading experts, I have designed, implemented, and managed all phases of complex projects through completion. My research has involved computer modeling and analyzing large amounts of satellite and oceanographic data, resulting in 7 peer-reviewed publications in top journals.

Education

University of Pennsylvania 2021 - 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

Stanford University. 2013-2018
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 2004-2008
B.A. Geology-Biology GPA: 3.9

Skills

Programming Languages: Java, Python (pandas, matplotlib), C, C++, SQL, MATLAB, R, IDL
Web: HTML, CSS, Javascript (dygraphs, D3.js, leaflet)
Data Science: Data wrangling, data visualization, model calibration and selection, uncertainty and sensitivity analysis, Monte Carlo and bootstrap methods, hypothesis testing, extreme value analysis, time-series analysis, high dimensional regressions, change-point models
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 Interactives (in progress)

- Conceptualized and created virtual classroom resources based on peer-reviewed science.
- Designed interactive data visualizations for students to explore the carbon cycle.
- Building User Interface for students to create evolutionary trees using published gene sequences.

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 Costa Rica, Mali, and Korea