

Daniel S. Johnson

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Education

Stanford University, Stanford, CA

June 2023

PhD: COMPUTER SCIENCE, STANFORD GRADUATE FELLOW
MS: COMPUTER SCIENCE

University of Illinois at Urbana-Champaign, Urbana-Champaign, IL

May 2018

Bachelor of Science: COMPUTER SCIENCE, WITH HIGHEST HONORS
Bachelor of Science: PHYSICS, WITH HIGHEST HONORS
Minor: MATHEMATICS

GPA: 3.93/4.00

Experience

InstaDeep/BioNTech, San Francisco, CA

July 2023 - Present

RESEARCH ENGINEER

- Collaborating with clients (including a large insurance corporation) to transition to data-driven decision-making utilizing ML/DL

Meta, Menlo Park, CA

June 2022 - September 2022

SOFTWARE ENGINEER INTERN - AUTOML

- Developed multi-stage inference algorithm that handling 50% of data on a simple ML model (LRwBins) embedded in product code
- Implemented algorithm in production environment
- Implemented robust tests showing a 1.3x latency speedup and 30% reduction of CPU resource usage
- This is a major improvement for a production environment making millions of inferences per second
- Published paper at AutoML 2023 (video link)

Stanford Artificial Intelligence Laboratory | Fedkiw Lab, Stanford, CA

September 2018 - June 2023

PHD STUDENT

- Wrote thesis on smoothing discontinuous physical phenomena for differentiability in learning
- Construct mathematical framework behind combination eulerian/lagrangian fluids optimization project
- Passed all 6 PhD qualifying exams for the ICME Program
- Deep Learning (CS230), Math in ML (CS205L), Graphics (CS148) Course Assistant

Nvidia, Santa Clara, CA

December 2021 - June 2022

SOFTWARE ENGINEER - OMNIVERSE (PART TIME)

- Developed GauGAN plugin for Nvidia Omniverse
- Worked toward temporally consistent vid2vid using semantically segmented 3D objects and scene generated point clouds as input

Nvidia, Santa Clara, CA

June 2021 - September 2021

SOFTWARE INTERN - ROBOTICS AI

- Improve physics simulation of ultrasonic waves (BRDF and specular bouncing)
- Train and improve parking obstacle avoidance network (ultrasonic data to evidence grid map)
- Integrate parking planner into physics simulation (Isaac Sim)

Intel, Santa Clara, CA

June 2020 - September 2020

DEEP LEARNING AND GPU INTERN

- Developed analytical multi-frame super-resolution algorithm
- Investigated algorithm pipeline in the context of deep learning

National Center for Supercomputing Applications (NCSA) | LIGO Project, Urbana, IL

February 2017 - July 2018

COMPUTATIONAL PHYSICS INTERN

- Developed critical waveform extraction software called the Python Open Source Waveform ExtractoR (POWER)
- Recognized as Outstanding Intern by Director of NCSA

Hybrid Illinois Device for Research and Applications (HIDRA) Fusion Reactor, Urbana, IL

January 2015 - June 2018

SENIOR UNDERGRADUATE RESEARCH STUDENT

Selected Publications (see website for full list)

- D. Johnson**, I. L. Markov, "Efficient Multi-stage Inference on Tabular Data." AutoML, Sep. 2023.
- D. Johnson**, R. Fedkiw, "Addressing Discontinuous Root-Finding for Subsequent Differentiability in Machine Learning, Inverse Problems, and Control." Preprint, May 2023.
- D. Johnson** et al., "Software-based Automatic Differentiation is Flawed." Preprint, May 2023.
- Z. Geng, **D. Johnson**, R. Fedkiw, "Coercing Machine Learning to Output Physically Accurate Results." JCP, Nov. 2019.

Selected Honors & Awards (see website for full list)

2018-2023	Stanford Graduate Fellowship , Stanford University College of Engineering	Stanford, CA
2017 - 2018	Knight of St. Patrick , University of Illinois College of Engineering	Champaign, IL
2017 - 2018	C.W. Gear Outstanding Undergraduate Student , UIUC CS Department	Champaign, IL
2016 - 2017	Crowe Horwath LLP Outstanding Computer Science Student , UIUC CS Department	Champaign, IL

Skills

Programming C/C++, Python, \LaTeX , Parallel Computing (CUDA, OpenMP, MPI), WebGL, Linux, Unity, Blender, VR

Relevant Courses Num. Linear Algebra, Num. Optimization, Convex Optimization, Parallel Programming, Discrete Math