

# Kastan Day

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## EDUCATION

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**University of Illinois at Urbana-Champaign** Ex: May 2023  
**MS Computer Science in Applied Machine Learning**

Relevant coursework:

- ML Engineering, ML Bioinformatics, Algo for Bioinformatics

**Swarthmore College** Sep 2016 – May 2020

**BA Computer Science, BA Cognitive Science** (double major)

Relevant Coursework:

- Machine Learning, Adaptive Robotics, Data Structures and Algorithms, Software Engineering, SQL Database Design

- Calculus, Linear Algebra. Statistics 1 & 2, Applied Statistics

**Phillips Academy Andover high school** Andover, MA

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## SKILLS

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**Proficient in:** Machine learning engineering and data engineering, Python, C/C++, Javascript (HTML/CSS), R, Java

**Data science ML:** PyTorch, TensorFlow, Keras, sklearn, fastai, OpenCV, PCL, numpy and pandas, Spark, Luigi, Kubernetes, distributed ML training (Ray.io), Horovod, Hadoop

**Full stack web:** Node.js, React, Flask; SQL, MongoDB; API design (large datasets), Docker, GCloud, AWS

**Technologies:** Linux (high confidence), shell scripting (Bash/Python), Git, LaTeX, Adobe CC

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## WORK EXPERIENCE

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**U of Illinois National Center for Supercomputing Applications** (NCSA)

*Research Assistant in Distributed Machine Learning Training*

Oct 2021 – Present

- Implemented distributed ML training on a GPU supercomputer, enabled by domain experts in biology and physics. Funded by the NSF.
- I work on a diverse team of scientists as an AI specialist for scientific applications, recently for climate modeling and materials engineering.

**Sarcos Robotics** – The world's most advanced [human exoskeleton](#) (CES expo demo)

*Machine Learning R&D Intern*

May – Sep 2021

- Independently developed machine learning vision segmentation models running on edge computers (Nvidia Jetson on-robot) and sensor fusion with 3D point clouds to understand 3D scenes in **pixel-per-pixel segmentation**, at 100+ FPS, for highly accurate robot planning.
- Tech: PyTorch & TensorFlow & Caffe, custom transfer learning, research engineering for 10x ML speedup by re-writing in TensorRT.

**Crescent** (startup) – Personalized sleep coaching <http://sleep.coach>

Silicon Valley, CA

*Co-Founder*

Jan 2018 – Dec 2019

My co-founder and I built Bioloop to solve the global crisis of sleeplessness, as enabled by personalized and preventative care using wearables data.

- **Backend web dev:** I designed and deployed REST APIs for machine learning inference, and research-grade ANOVA statistical analysis in R. I also built robust data pipelines for continuous ingest, and transform of customer's data, and built and maintained the full product lifecycle using MongoDB, Express, React, NodeJS.
- **Communication:** my writing and pitch secured Y-Combinator and Trinity Ventures on Sand Hill road interviews, and an invite to their YC120 conference for 100 promising young people to have a weekend of unstructured conversations with 20 Silicon Valley tycoons.
- **Customer obsessed:** I conducted 350 customer interviews, and personally onboarded each of our first 150 customers. This hands-on approach enabled max-speed iteration by understanding customer pain points and building retention features to see next day improvements.

**NASA** ([LaRC Autonomy Incubator](#))

*Software Engineering Intern*

05/2017 – 08/2017 and 05/2018 – 08/2018

- I was wholly responsible for the computer vision software running a prototype robotic arm to assemble satellites while in Earth's orbit.
- I developed highly parallel camera data filtering and intelligent smoothing in C++. [I contributed to two open source projects](#) to increase the performance of my algorithm 10x from the standard PCL implementation. I thrived in a highly collaborative NASA Rapid Research group.
- **Tech:** production quality C++, [OpenCV](#) and [PCL](#), [ROS](#), Linux system admin (Bash/Python scripting), [Intel Realsense 3D](#), Doxygen.

**NASA** ([LaRC Autonomy Incubator](#))

*Science Communication Video Intern* – [view my best work on my website](#)

05/2016 – 08/2016

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## SOFTWARE PROJECTS

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**AI Hackathon in Molecular Dynamics – Argonne National Labs**

Feb 2022

First place winner for developing a novel AI solution for molecular structure prediction.

- I served as an AI expert on a heterogeneous team of scientists to predict a polymer's properties given its molecular sequence.
- I collaborated with material science experts and realized I could solve this molecular problem with image techniques. I transformed the molecular sequence into an image and built a custom CNN that achieved best-in-class performance.
- **Tech:** feature engineering using Kernel Machines and Variational Autoencoders, PyTorch Distributed Data Parallel, HPC, Dask.

**HackMIT** – 2<sup>nd</sup> consecutive win! [1 of 10 overall winners](#) out of 400+ teams and 1,250 students

Sep 2018

**Won best use of machine learning** (Microsoft Azure), and the best use of natural language processing (Quora)

- We created an app to help students engage with their mental health through personalized journal prompts. I created a novel ML model to generate natural-language journal prompts using only a user's photos and location history.

**HackMIT** – [1 of 10 overall winners](#) out of 400+ teams and 1,250 students

Sep 2017

Won Best hack for the Social Good (Baidu) and Most Interesting use of Data (Hudson River Trading)

- We created [web app for fake news detection](#). I designed a novel NLP model to compare news sources, if many reputable sources all agree on a topic, we say it is most likely true. Watch my [Youtube video](#), or read the [technical blog post](#).