



# NEEL REDKAR

Data Scientist and Web Developer

## PROFILE

Skilled full stack developer with 5+ years of experience, and 3+ years of experience with data analysis and artificial intelligence. Recognized for hard working ethic, love for learning and adaptability. Also proven on multiple occasions to raise money for events and help gather sponsorships.

## CONTACT

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## SKILLS

Advanced Programming  
Data Science/Neural Network Algorithm  
Linux Server Administration  
Team Leadership/Event Organization  
Hardware Development/Systems  
Programming  
Fullstack Developer  
Database Management  
National Competitive Policy Debate!

## LANGUAGES

Python: Keras, Pytorch, TensorFlow, Flask,  
Numpy, Bash/Scripting, Node.js: React/React  
Native, Next.js, MongoDB, Express, Electron  
Bash, C, C++, Java, SQL, HTML/CSS, Rust,  
Golang

## EDUCATION

### Berkeley (Summer Semester)

2021-2021: 4.0 GPA – CS61A Introduction to Computer Science (99%)

### Diablo Valley College

2018 – Current: 4.0 GPA - Intro to Computer Science; Programming with Java (Equivalent of AP COMPSCI); Algebra 2; Trigonometry; Chemistry

### Dougherty Valley High School

2019 – 2023: AP Physics C, AP World History, AP Calculus AB/BC, AP Biology, AP Statistics, AP US History, AP Literature, AP Computer Science A

## WORK EXPERIENCE/ CONFERENCES

### TeachAids – Intern

2020-2021 <https://covidb.org>  
Worked on multiple projects including CoviDB and CoviDB Speaker Series, as well as headed development at CoviDB for Kids. CoviDB is a community-built, expert-curated

### Roambee – Technical Intern

2021-2021 <https://roambee.com>  
Worked at [Roambee](https://roambee.com) developing a Node Intelligence program to make a map interface that improves automatically with new data. Used data science & unsupervised learning.

### Summer of Making - Tech Lead/Organizer

2020-2021 <https://summer.hackclub.com>  
Summer grants for people from 28 countries and 143 different cities to learn and create projects. Raised over 50K in funding thanks to our GitHub sponsorship.

### AngelHacks - Organizer Director of Technology

2019–Current <https://angelhacks.org>  
Successfully organized a hackathon in Los Angeles to help computer science education, raising over \$15,000 total with 130+ participants.

### DVHacks Hackathon & School Club President

2019–Current <https://dvhacks.tech>  
Organized the logistics of this hackathon and helped obtain sponsorships. Overall it was a great success with 220+ signups and many great sponsors!

### Nujjet – Chief Technology Officer

2020–Current <https://nujjet.us>  
NUJJET is our response to the widespread pandemic of high school stress of today. By creating a low cost neuro headset to monitor and modulate your brain with audio, we can help you study more effectively, and make long term changes.

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Fondazione Bruno Kessler Research Abroad – Technical Intern

2022-2022 <https://www.fbk.eu/en/>

Developed ML models to predict air quality from IoT sensors, lowering costs. Manipulated waveform data, denoising large amounts of data. Discovered I love collaborative research as well as constantly collaborating with the community.

Sinerider Three Blue One Brown Grant Sanderson – Lead Game Architect & Developer

2022-2022 <https://sinerider.com>

Recruited by 3blue1brown to build a game to inspire love for math & graphing in young kids. Developed using a custom game engine along with Crockford classless javascript! Pushing through deadlines we ended up #1 on YC HackerNews

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## PROJECTS/AWARDS

**CarbNN: A Novel Active Transfer Learning Neural Network to Build De Novo Metal Organic Frameworks (MOFs) for Carbon Capture – Invited to speak at AAAI Conference 2023, 2<sup>nd</sup> Grand Award International Science & Engineering Fair, First Place California Science & Engineering Fair, ISEF Finalist, First Place CCCSEF, 500\$ Chevron Grant, American Meteorological Society Honor Award**

Carbon capture is one of the most promising ways to reach sustainable zero carbon emissions by 2050. To help create more efficient carbon capture, I designed a novel neural network to generate a metal organic framework to perform efficient carbon capture, as well as turn the carbon dioxide into usable fuel with electrocatalysis, decreasing CO<sub>2</sub> transportation costs dramatically. Through this I learned many machine learning techniques, such as graph neural networks, active transfer learning, and developing novel architectures. The generated crystal looks promising, and collaboration with labs in the topic area is being done. PAPER: <https://s.neelr.dev/carbnn-research-paper>

**Nujjet – First Global Conrad Innovation Challenge Internationally, Conrad Diversity Award, GATSVI Investment**

NUJJET is our response to the widespread pandemic of high school stress of today. By creating a low-cost neuro headset to monitor and modulate your brain, we can help you study more effectively, and make long term changes. In technological terms it utilizes AI to determine the focus level of the person utilizing the headset, and uses generative audio to induce a certain state of mind. <https://nujjet.us>

**Utilization of Generative Neural Networks to Develop Novel Molecules to Target Leishmaniasis – Good of Humanity Rotary Table, Third Place Contra Costa County SEF**

With more than a billion people being affected by neglected tropical diseases without a financial incentive, there is a great need to lessen the barrier to drug discovery. In this research paper I look at different generative networks for drug discovery and attempt to develop a molecule to target a specific pathway in Leishmaniasis. In conclusion I was able to successfully generate a molecule that an expert in the field said looked promising, as well as learned a lot more about generative unsupervised and supervised AI learning methods and networks. PAPER:

<https://s.neelr.dev/leishnn-research-paper>

**Smart Recycle – First Place Contra Costa County SEF, Second Place California SEF**

This is an app that uses machine learning and image recognition to help people sort their recycling between trash, recycling, and compost. This project is on the App Store and won 1<sup>st</sup> place in the community and 2<sup>nd</sup> place in the California Science Fair. <https://github.com/neelr/SmartRecycle>

**Earthquake Prediction Using AI – Second Place Contra Costa County SEF**

This is a science fair project where I used a neural network to try to predict whether an earthquake would happen, using seismic data 24 hours before the earthquake. This was very informative as I got to use libraries such as Keras and Numpy. I also learned how much energy goes into gathering data, as there was no prebuilt dataset for this project. <https://github.com/neelr/EarthquakePrediction>. This project won 1<sup>st</sup> place in the CCC Science and Engineering Fair!

**Flappy Bird AI**

Built a neural network from scratch in Javascript, learning intricacies and different architectures on the way. I utilized no prior libraries or tools, using only the primitive typings of Javascript. It utilizes reinforcement learning to train an agent to play flappy bird as to not hit any of the poles. I learned a lot about how neural networks work, and different architectures.

<https://flappyai.hacker22.repl.co>

**Ghym – First Place HackMerced Collegiate Hackathon**

Ghym was a hackathon project made at HackMerced, a college hackathon. Ghym is a P2P Cloud Computing network, where nodes on the network are able to send jobs to one another, unlike normal cluster's today. This allows for people to put their old computers to use, so that students and ai learners, can have a network where they can train their neural networks fast and efficiently! This ended up winning 1<sup>st</sup> place in the Moonshot category, also winning the best usage of MongoDB. <https://github.com/neelr/ghym>

**HabitBot – Congressional App Challenge Winner**

Habitbot is an app that uses natural language processing, to create a chat application where students can chat to a bot which tries to help them stop their addiction. It can tell whether or not the test given indicates if they are improving, and accurately gives them advice on how to stop. This was an application of AI to help our schools, because many high schoolers end up getting addicted to drugs throughout their learning career. We won 3<sup>rd</sup> in the Congressional App Challenge in our district. <https://github.com/neelr/HabitBot>

### **Hack University**

This is another site that's gaining popularity with 65+ users! Hack University is a way for students to teach other people cool and interesting things, or for teachers to open source syllabuses! Anyone can easily and seamlessly create a new class and teach it, and it's even easier to enroll! This way, we can work together as a community to increase learning and education during the time of crisis which is COVID19! I'm currently working with teachers across the district to open source the syllabuses and zoom classes! <https://university.hackclub.com>

### **Templater**

A cli to create and share code templates and structure! This makes life super easy, so you don't have to create the React folder structure, and can create production ready structure in seconds! Also the best part about this, is since it has integration with GitHub, you can upload and download other people's structures, so the possibilities are endless! It also has a UI so you can browse other peoples templates. This helped me understand using Golang as a CLI, and on the server integrating it with firebase and GitHub authentication. Check it out at <https://tmplttr.now.sh> or the source at <https://github.com/neelr/templater>