# Abhi Jadhav

US Citizen | abhijadhav9571@gmail.com | GitHub: a1pha | Portfolio: abhijadhav.me

## EXPERIENCE

**KITWARE** | Research Development Intern
May 2020 – Aug 2020 | Chapel Hill, NC

- Developed deep learning models to classify melanoma from dermoscopic images, along with prediction explanations.
- Investigated LRP, DeepLIFT, and other explainable AI (XAI) algorithms to increase explainability of dermoscopic machine learning.
- Conducted survival analysis on electronic health records data (EHR) for chronic obstructive pulmonary disease patients 30-day mortality.

**REMEDYSLEEP.ME** | CTO and Co-Founder
Feb 2019 - Present | Durham, NC

- Head technical development for student-run venture centered around improving patient satisfaction and comfort in hospitals by minimizing untimely sleep interruptions using wearable devices.
- Combine Apple Watch or FitBit, wearable-derived biometric data, proxy iOS app, and IoT indicator into a workflow change for hospitals, to allow caregivers to reduce interruptions during sleep.
- Currently overseeing/developing prototypes for data collection in clinical validation study at Duke Raleigh Hospital.
- Manage >$15,000 funding received from various innovation grants.

**PSYCHIATRY AND ADDICTION** | Research Assistant
Jan 2018 - Present | Duke University School of Medicine, Durham, NC

- Develop algorithms and hardware for novel interventions in sleep health, smoking cessation, and cardiovascular health.
- Manipulate and process medical data of many forms: wearable sensor data, electronic health records (EHR), environmental imaging.
- Implement supervised machine learning through CNNs, object detection, RNNs, transfer learning, and ordinal regression.

## PROJECTS

**SLEEP APNEA DX WEARABLE** | abhijadhav.me/sleepapnea
Senior Design Project (BME Design Fellows)

- 1 of 4 team members who designed, sourced sensors/parts, and assembled a wearable capable of diagnosing sleep apnea at home.
- Interfaced ESP32 MCU, 2 accelerometer (thoracic, abdominal), ECG, and PPG sensors using Arduino (C) and I2C protocols.
- Wrote MATLAB script for signal acquisition and collection.

**QUITIT!** | abhijadhav.me/quitIT
HackMIT 2019

- Aims to help at-risk smokers prevent relapse by environment-based risk prediction through a Google Glass-like wearable device.
- Interfaced environment ML classifier, Raspberry Pi Camera, Firebase, and iOS App to give patients real-time smoking cessation strategies.

**PROMETHEUS** | abhijadhav.me/prometheus
JHU MedHacks 2018

- Developed electronic health records (EHR) solution for countries with limited internet access, using the ubiquitous GSM network.
- Solution compresses/encrypts medical records using ICD9/10 terms and algorithms. Twilio's API was used in the backend.

## EDUCATION

**DUKE UNIVERSITY**
B.S.E., Biomedical Engineering
B.S. Computer Science
2017 - 2021 (Expected May 2021)
Dean's List

## SKILLS

**PROGRAMMING**
Python • C/C++ • Matlab
Java • MIPS32 • SQL
CUDA • Cilkplus • Swift

**HARDWARE**
3D Printing • AutoCAD
PCB Design • Arduino/MCs
EAGLE (e-CAD) • Verilog • Lasercutter

**GENERAL**
Data Structures • Algorithms
Deep Learning • Computer Vision
Signal Processing • Operating Systems
Computer Arch. • Parallel Computing

## COURSEWORK

**GRADUATE**
Machine Learning for Medical Imaging
Computer Vision
Design for People with Disabilities

**UNDERGRADUATE**
Computer Architecture (C, MIPS32, x86)
Operating Systems (C/C++)
Data Structures and Algorithms
Medical Design I-II
Machine Learning (Python, Tensorflow)
Modern Diagnostic Medical Imaging
Data Science (R, Python, Conda)

**TA ROLES**
CompSci 250: Computer Architecture (Fall 2019, Spring 2020)
STA 199L: Data Science (Fall 2018)
MATH 353: ODEs and PDEs (Fall 2018)

## HONORS

2020 Duke BME Design Fellow
2019 Duke BIG Grant Winner ($10k)
2019 Duke Bass Grant Winner ($5k)
2019 HackMIT Top 10% Project
2019 THInC (Hackathon) 3rd Place
2018 JHU Medhacks Finalist (Top 10)
2017 Questbridge Scholar (Duke Univ.)