DEEPIKA AGGRAWAL

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EDUCATION

University of Illinois at Chicago, Chicago *May'21 – Present*
Ph.D. Student, Electrical and Computer Engineering *(GPA: 3.75)*
Advisor: Dr. Dan Schonfeld

Purdue University, West Lafayette *May 2019*
Bachelor of Science, Computer Engineering
Semester Honors: Fall 2018

SKILLS

Programming Languages & Framework: Python, Linux, SQL, Java, HTML, CSS, C++, scikit-learn, Tableau, TensorFlow, Git, Docker, Anaconda

WORK EXPERIENCE

Graduate Research Assistant, OPIRA Lab at UIC *May'21 – Present*
- Advisor: Dr. Dan Schonfeld
- Co-advisor: Dr. Kamran Avanaki

Graduate Research Assistant, Bio Microsystems Lab UIC *Dec'19 – Present*
- The research aims to accurately track the behavioral patterns in zebrafish. The fish is provided with a variety of stimulus and the neural activity and movement is recorded. Applied pattern recognition and machine learning to predict the intent of tail and eye movement of the fish depending on the direction of stimulus and food provided.

Computer Vision and Machine Learning Engineer, ezClinic *Sep'20– Dec'20*
- Working on ER, ICU and remote patient monitoring which includes patient actions like pulling out intubation tubes, aggressive behavior tracking, breathing etc. with deep learning and computer vision on 3D volumetric video streaming. It aims to design a platform for complete virtual healthcare, to include Telemedicine and Tele-ICU.

CNA Insurance Software Engineering Intern (Spring Boot, React, JIRA, PIT, Sonar Lint) *Summer'20*
- Worked in Agile environment as a Full stack developer.
- Enhanced API features using React JS on CNA Central Appetite. The website helped brokers get an insight on the broad variety of business market offered by CNA Small Business. The interface added value to CNA's small business segment by allowing user to better navigate the website. Functionalities such as filtering, searching, exporting to excel and sorting were added.
- The backend application was built on Swagger API to send and receive requests. Added HTML Parser for cleaner API responses. Added SIC Category to the response that allowed user to know which category the SIC fall in. We used PIT testing and Sonar lint plugin to enhance the quality of code and make the code future error proof.

SmartFacility Developer Team Leader, Purdue Bechtel IDC, West Lafayette *May'18 – Dec'18*
- Developed a login application for the Bechtel department that allowed students to login with their Purdue credentials and create a project with a name, members (accessible through Purdue database by typing Purdue ID number/ Purdue email) and resources required.
- All the created projects are shown in the admins pending list which allowed him/her to approve the project after reading the description.
- After the project is approved, it prompts the student with required training that needs to be completed for the successful use of resources.
- This web applications also allow the student to real-time track the availability of resources for his/her project. It also tracks the real-time completion of training for the resources. Students are only allowed to unlock resources after training completion.
- Environment: Django, Python and SharePoint

Xcelerator Fellowship, Purdue Agriculture Department, West Lafayette *May'18 – Aug'18*
- Built a knock detecting detachable smart lock that can lock/unlock the door allowing either keyed or keyless entry.
- Used Raspberry Pi, HC-06 and Piezo sensors.
- Environment: Python, Android, and Assembly

PUBLICATIONS

Articles in peer-reviewed conference proceedings

Deepika Aggrawal, Mohsin Zafar, Dan Schonfeld, and Kamran Avanaki "Deep learning-boosted photoacoustic microscopy with an extremely low energy laser", Proc. SPIE 11960, Photons Plus Ultrasound: Imaging and Sensing 2022, 1196010 (3 March 2022); https://doi.org/10.1117/12.2613061

RESEARCH GROUPS

Earth History Visualization (VIP at Purdue) *Aug'16 – Dec'18*

- Worked with Dr. James G. Ogg
- Added new features to the tscreator web application which is required by the students of Geotech at Purdue University. Developed a new online website which removed the hassle of downloading the software.
- **https://engineering.purdue.edu/Stratigraphy/tscreator/**

TADA (EPICS at Purdue) *Aug'18 – Dec'18*

- Worked with Professor Edward J. Delp
- Developed a phone application that allowed users to take a video of food before and after they eat, and the pictures are then sent to the server which is then processed to determine the recommended diet and amount of calories consumed by the user

CAM2 Team at Purdue *May'17 – Aug'18*

- Worked with Professor Yung-Hsiang Lu
- Worked with the camera database team, using Python, retrieved m3u8's for videos, code to extract URLs in beautiful soup and hosted using Heroku.

PROJECTS

Predicting Susceptibility of Quarantine Patients to COVID-19 Virus using X-ray Scan *Spring'20*

- Proposed a deep learning architecture using transfer learning on a CNN model to classify the risk of COVID-19 infection in patients using chest radiography images.
- Accuracy of 86% received on the testing data.

Vehicle Detection and Counting (Python, Computer Vision) *Spring'20*

- In this project, we tried to improve the vehicle counting and classification in the paper "A Video Based Vehicle Detection, Counting and Classification System."
- We used Gaussian Mixture model background subtraction to detect the vehicle in images. We use centroid tracking system to count the vehicle in the video by drawing a line in the frame and whenever the centroid of the bounding box touched the line, the count is increased by one.

Employee attendance detection with Face recognition (Python, Computer Vision) *May'19*

- Keeps track of employees in the office. It notices the time when the person went inside and outside the office space and calculates the total time spent by the employee in the office space. The goal of the project is to provide additional check system for the work hours tracking.

Automatic Bartender (STM32 microprocessor, Android, Assembly, C language) *May'19*

- Designed a home-use automatic bartender which can receive drink request from the smartphone application. An ultrasonic range detector was used for overflow detection.

CO-CURRICULAR ACTIVITIES

Rally Line, Purdue University. *Jan'19 – May'19*

- Served as a college ambassador. In charge of informing alumni, parents, and friends of the campus happenings while encouraging them to financially support the Annual Fund and other college programs and priorities.

Mentor at Code Café event, Purdue University. Mar'18

- Taught Python concepts which range from variables, loops, and conditionals to scientific computing techniques, Python APIs, and other advanced Python tools, techniques, and libraries.