Jinen Setpal

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Education

May 2024 | **Purdue University**
BSc, Data Science & Cybersecurity · Indiana
First Year, Fall 2021
Major GPA - 4.00 / 4.00
Corporate Partnership: MISO

- Employing logging systems for anomaly detection over contiguous executions.
- Developing a pipeline for realtime evaluation over Azure's ML Suite

Relevant Courses:

Fall 2021: CS180: Object Oriented Programming with Java

Spring 2022: CS527: Software Security, CS380 Python Programming, CNIT176: InfoTech Architecture

Work Experience

July 2021 | **Teachiq AB / exam.net**
System Developer · Remote
Developed native Linux desktop applications for exam delivery service exam.net.

- Packaged custom security implementations by forking open source xmodmap(.c) utility to a node.js module
- Exploited the assessment kiosk on exam.net's web client.

Current Research

2022* **Identifying Cryptographic Functions from Pre-Compiled Binaries** Employing rudimentary techniques within NLP to establish a baseline approach for reconstructing cryptographic functions from disassembler code used to generate corresponding binaries.

2022* **Rethinking Space-Time Networks with Improved Memory Coverage for Efficient Video Object Segmentation** Developing the Tensorflow Re-Implementation of STCN for Visual Object Segmentation, using information obtained from the open-source PyTorch code, additionally conducting supplementary experiments to expand the current scope of research.

2022* **TE-Connect AI Cup** Creating a GAN to emulate photo-realistic bolts from synthetic data to train an aggregator network for classification.

Skills

Programming Languages	Python, C++, Java, Kotlin, Javascript, Bash, Assembly, Arduino, MATLAB, SQL
Frameworks	Tensorflow, Pytorch, scikit-learn, ROOT, Node.js, Vue.js, Electron, Docker, Kubernetes, Sagemaker
Cloud Utilities	CI/CD Scripting, Google Cloud Console (Compute, Networking, Storage), Amazon Web Services (Redshift), Azure Pipeline
Development Utilities	Gradle, Git, Jupyter Notebook, Google Colaboratory, MariaDB, NoSQL, PostgreSQL

Outreach

2021	Special-Interest-Group AI @ Purdue	*Project Manager (x2)*
2021	b01lers CTF @ Purdue	*CTF Team*
2021	TEDxYouth @ RNPodar – Blindspots	*Technical Lead*
2021	ACL Year-Round Mentorship	*Mentee*

Cybersecurity Training

2020 **ECSA** – EC-Council Certified Security Analyst
2019 **CEH** – Certified Ethical Hacker

Publications

2021 *CutLang V2: Advances in a runtime-interpreted analysis description language for HEP data*, Frontiers in Big Data, 4, 27, Dr. Gökhan Ünel, et al. — ***CERN, Switzerland***

- Developed CI/CD Scripting w/ Automated Email Delivery using GitHub Actions & SendGrid
- Developed Interpreter Functions through lexical analysis using Flex & Bison (.cpp)

2020 *ArchiMeDe @ DankMemes: A New Model Architecture for Meme Detection*, Proceedings of the Seventh Evaluation Campaign of Natural Language Processing and Speech Tools for Italian. Final Workshop (EVALITA 2020), Jinen Setpal, Gabriele Sarti. — ***EVALITA***

- Achieved $.7664$ F1-Score on test dataset ($+.2466$ baseline) w/ Video Presentation during final workshop
- Developed multimodal ensemble using transfer learning through AlexNet, DenseNet & ResNet pre-trained networks

Patents

2022 **[Patent Pending]** *Semi-Supervised Class Activation Mappings for Target Localization & Super-Resolution*, Jinen Setpal, et al. — ***TE Connectivity***

- Developed a proprietary pipeline for PCB connector classification, integrated within a SaaS.
- $50,000 EST time savings for 500 different connector types.

Projects

2022* **Reproducibility Challenge: Panoptic-Deeplab** — *Independent*

- Developed multiheaded neural architecture for bottom-up panoptic segmentation trained on the cityscapes dataset using Tensorflow with Python.
- Implemented shared encoder with dual ASPP and decoder modules based on Google's Deeplabv3 implementation.
- Built training and evaluation pipelines with loss functions and callbacks described in the paper.

2021 **CheXNet for Pneumonia Diagnosis** — *DAGsHub*

- Trained a DenseNet121 network on the ChestX dataset, creating a blind paper reproduction of Stanford's CheXNet.
- Produced class activation heatmaps highlighting areas within affected lung scans.
- Presented as the sign-up walkthrough for repository hosting service `www.dagshub.com`.

2021 **Embedded Realtime Semantic Segmentation** — *Independent*

- Embedded DeeplabV3+ with a MobileNetsv3 backbone to Android using Java.
- Established a data conversion pipeline (NV21 -> YUV_420_888 -> JPEG -> Bitmap -> TensorImage), and achieved an inference framerate of $\approx 25 fps$.

2021 **Time-Series Modelling for Outbreak Prediction** — *CERN, Switzerland*

- As part of CERN's The Port Hackathon, predicted $oidium$ outbreaks within vineyards in Germany.
- Achieved test accuracy of 0.995 (± 0.0025) when predicting outbreak risk, trained on data from 2013 - 2020 with a frequency of once per day.

2020 **AatmaNirbhar (Independent) App Innovation Challenge** — *Govt of India*

- Developed an open-source social network using a Firebase backend, for Android and iOS on a Firebase backend.

Note: * = ongoing project