Efstathia Soufleri

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EDUCATION

08/2017 - Present **Purdue University** West Lafayette, USA
Ph.D. in Electrical and Computer Engineering
Focus: **Efficient and Privacy Preserving Machine Learning Algorithms**
Advisor: Prof. Kaushik Roy
GPA: 3.83/4.00

03/2016 - 07/2017 **University of Thessaly** Lamia, Greece
Master of Science in Computer Science
Focus: Efficient Algorithms for Video Compression
GPA: 9.72/10.00

10/2012 - 02/2016 **National and Kapodistrian University of Athens** Athens, Greece
Bachelor of Science in Applied Mathematics
GPA: 7.42/10.00

WORK EXPERIENCE

- **Graduate Research Assistant - Purdue University** 08/2023 - Present
  Advisor: Prof. Kaushik Roy
  Worked at **Center for the Co-Design of Cognitive Systems (COCOSYS)**
  - My research focus is on **Privacy Preserving Machine Learning**
  - Conducted research on Differentially Private Image Synthesis utilizing discriminative models, achieving up to a 20% improvement in classification accuracy compared to Generative Adversarial Network based methods

- **Graduate Research Assistant - Purdue University** 08/2017 - 08/2023
  Advisor: Prof. Kaushik Roy
  Worked at **Center for Brain-inspired Computing (C-BRIC)**
  - My research focus is on **Computer Vision and Action Recognition**
  - Implemented a framework for progressive knowledge distillation for action recognition tasks in compressed videos using early exits, improving accuracy up to 5.87%
  - Designed a Pytorch framework for deep neural network compression to automatically determine the optimal quantization bit-width across convolutional neural network layers reducing network size by up to 6x
  - Developed a hybrid RRAM-SRAM system for reducing energy demands (up to 2.88x) while maintaining the accuracy of deep neural networks for vision tasks

- **Graduate Research Assistant - University of Thessaly** 03/2016 - 07/2017
  Advisors: Prof. George Stamoulis, Prof. Athanasios Loukopoulos
  Worked at the **Department of Computer Science**
  - My research focus is on **Efficient Video Compression Algorithms**
  - Researched and developed a heuristic algorithm for partitioning a matrix using tiles for video compression

RESEARCH PUBLICATIONS

- Deepak Ravikumar, **Efstathia Soufleri**, and Kaushik Roy. "Unveiling Privacy, Memorization, and Input Curvature Links", In 2024 International Conference on Machine Learning (ICML)
- **Efstathia Soufleri**, Deepak Ravikumar, and Kaushik Roy. "DP-ImgSyn: Dataset Alignment for Obfuscated, Differentially Private Image Synthesis", In 2024 Transactions on Machine Learning Research (TMLR)
- Deepak Ravikumar, **Efstathia Soufleri**, and Kaushik Roy. "Curvature Clues: Decoding Deep Learning Privacy with Input Loss Curvature", under review at the Conference on Neural Information Processing Systems (NeurIPS) 2024
- **Efstathia Soufleri**, Deepak Ravikumar, and Kaushik Roy. "Progressive Knowledge Distillation for Enhanced Efficiency and Accuracy for Compressed Video Action Recognition", under review at the British Machine Vision Conference (BMVC) 2024
- Adarsh Kosta, **Efstathia Soufleri**, Indranil Chakraborty, Amogh Agrawal, Aayush Ankit, and Kaushik Roy. "HyperX: A Hybrid RRAM-SRAM partitioned system for error recovery in memristive Xbars", In 2022 Design, Automation & Test in Europe Conference & Exhibition (DATE), pp. 88-91. IEEE, 2022
- **Efstathia Soufleri**, and Kaushik Roy, "Network compression via mixed precision quantization using a multi-layer perceptron for the bit-width allocation", IEEE Access 9 (2021): 135059-135068
- Priyadarshini Panda, **Efstathia Soufleri** and Kaushik Roy, "Evaluating the Stability of Recurrent Neural Models during Training with Eigenvalue Spectra Analysis", In 2019 International Joint Conference on Neural Networks (IJCNN) (pp. 1-8). IEEE
- **Efstathia Soufleri**, "Video coding algorithm and optimization techniques", Master's Thesis (2017)

SKILLS

- Python, Pytorch, C, C++, MATLAB, Keras, Tensorflow, Verilog, MxNet, Shell Script (Bash Linux), Version Control (git)

AWARDS

- Gerondelis Foundation Award for **Academic Excellence**, 2021
- **Valedictorian**, University of Thessaly, 2017
- **Academic Excellence Scholarship** from the Greek State Scholarships Foundation, 2012

RELEVANT COURSEWORK

- **Machine Learning courses**: Deep Learning, Introduction to Neural Networks, Statistical Machine Learning, Introduction to Artificial Intelligence
- **Computer Science courses**: Data Structures, Randomized Algorithms, Computational Models and Methods
- **Math courses**: Random Variables and Probability, Linear Algebra and Applications, Convex and Stochastic Optimization and Applications
- **Online courses**: NLP with Deep Learning (LLM), Deep Generative Models, Introduction to Convolutional Neural Networks for Visual Recognition