Nghia Doan

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EDUCATION

McGill University, Montréal, Quebéc, Canada 2017–August 2022 (expected)

- Ph.D. in Electrical and Computer Engineering, GPA: **3.4/4.0**.
- Supervisor: Professor Warren Gross.

Seoul National University, Seoul, South Korea 2015–2017

- MSc in Electrical and Computer Engineering, GPA: **3.9/4.3**.
- Supervisor: Professor Hyuk-Jae Lee.

Posts & Telecommunications Institute of Technology, Hanoi, Vietnam 2009–2014

- B.Eng. in Electrical and Computer Engineering, GPA: **8.7/10.0** (top of class).

HONORS AND AWARDS

- *McGill Engineering Doctoral Award* 2017
- *A-san Foundation Scholarship* 2016
- *Samsung Electronics Award* 2015
- *Scholarships for Academic Excellent* 2009-2014

TECHNICAL SKILLS

- ***Programming Languages***: MATLAB, C/C++, Python, VHDL, Assembly.
- ***Softwares and Libraries***: Visual Studio Code, LaTeX, PyTorch, TensorFlow, OpenCV.
- ***Design Tools***: ModelSim, Quartus, Altium Designer, Proteus, MDK-Arm, AVR Studio.

RESEARCH TOPICS

- **High-Performance Decoding of Short Polar and Reed-Muller Codes with Machine Learning for 5G/6G Standards** 2017–present
  Utilize state-of-the-art machine learning techniques in the design of low-complexity and high-performance decoding algorithms for short polar and Reed-Muller codes, which are targeted for 5G-and-beyond communications standards.

- **Abnormal Pedestrian Detection Using Surveillance Video Data** 2016–2017
  Design an automated deep learning algorithm that can detect abnormal behaviors of pedestrians including entering prohibited area, running, and moving with abnormal directions.

- **Hardware-Friendly Encoding for High-Efficiency Video Coding (HEVC)** 2015–2016
  Design a hardware-friendly integer motion estimation engine used in the HEVC standard.

- **ARM-based Controlling System for Quadcopter** 2014–2015
  Implement an RF-based signal decoder, motor-driver functions, sensor fusion algorithms, and simple PID controlers for a quadcopter using a customized Arm Cortex-M4 embedded system.

SELECTED PUBLICATIONS

Book Chapter

1. W. J. Gross, N. Doan, E. N. Mambou, and S. A. Hashemi, "Deep Learning Techniques for Decoding Polar Codes", Wiley, 2019.

Journal Papers

1. N. Doan, S. A. Hashemi, M. Mondelli, and W. J. Gross, "Decoding Reed-Muller Codes with Successive Factor-Graph Permutations", IEEE Transactions on Communications, **submitted**.

2. N. Doan, S. A. Hashemi, and W. J. Gross, "Successive-Cancellation Decoding of Reed-Muller Codes with Fast Hadamard Transform", IEEE Transactions on Vehicular Technologies, **submitted**.

3. <u>N. Doan</u>, S. A. Hashemi, and W. J. Gross, "Fast Successive-Cancellation List Flip Decoding of Polar Codes", IEEE Access, **submitted**.

4. <u>N. Doan</u>, S. A. Hashemi, F. Ercan, T. Tonnellier, and W. J. Gross, "Neural Successive-Cancellation Flip Decoding of Polar Codes", Journal of Signal Processing Systems, 2020.

5. F. Ercan, T. Tonnellier, <u>N. Doan</u>, W. J. Gross, "Practical Dynamic SC-Flip Polar Decoders: Algorithm and Implementation", IEEE Transactions on Signal Processing, 2020.

6. <u>N. Doan</u>, T. S. Kim, C. E. Rhee, and H.-J. Lee, "A hardware-oriented concurrent TZ search algorithm for High-Efficiency Video Coding", EURASIP Journal on Advances in Signal Processing, 2017.

7. <u>N. Doan</u>, S. Kim, L. C. Vo, and H.-J. Lee, "Anomalous Trajectory Detection in Surveillance Systems Using Pedestrian and Surrounding Information", IEIE Transactions on Smart Processing and Computing, 2016.

Conference Papers

1. <u>N. Doan</u>, S. A. Hashemi, F. Ercan, and W. J. Gross, "Fast SC-Flip Decoding of Polar Codes with Reinforcement Learning", IEEE International Conference on Communications (ICC), Montreal, Canada, 2021.

2. <u>N. Doan</u>, S. A. Hashemi, and W. J. Gross, "Decoding of Polar Codes with Reinforcement Learning", IEEE Global Communications Conference (GLOBECOM), Taipei, Taiwan, 2020.

3. <u>N. Doan</u>, S. A. Hashemi, F. Ercan, T. Tonnellier, and W. J. Gross, "Neural Dynamic Successive Cancellation Flip Decoding of Polar Codes", IEEE International Workshop on Signal Processing Systems (SiPS), Nanjing, China, 2019.

4. <u>N. Doan</u>, S. A. Hashemi, E. N. Mambou, T. Tonnellier, and W. J. Gross, "Neural Belief Propagation Decoding of CRC-Polar Concatenated Codes", IEEE International Conference on Communications (ICC), Shanghai, China, 2019.

5. <u>N. Doan</u>, S. A. Hashemi, M. Mondelli, and W. J. Gross, "On the Decoding of Polar Codes on Permuted Factor Graphs", IEEE Global Communications Conference (GLOBECOM), Abu Dhabi, UAE, 2018.

6. <u>N. Doan</u>, S. Ali Hashemi and W. J. Gross, "Neural Successive Cancellation Decoding of Polar Codes", IEEE 19th International Workshop on Signal Processing Advances in Wireless Communications (SPAWC), Kalamata, Greece, 2018.

REFERENCES

Prof. **Warren Gross**
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Dr. **Seyyed Ali Hashemi**
Qualcomm, San Diego, California, USA
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Dr. **Furkan Ercan**
Boston University, Boston, Massachusetts, USA
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