Tiep Huu Vu

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Contact Information

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Research Background

- **Computer Vision and Machine Learning**: Robust image classification using structured sparse representations and dictionary learning.
- **Sparse Recovery and Representation methods:** Convex optimization-based algorithms for sparse recovery.

Education

The Pennsylvania State University, State College, PA — 2013–2018 (expected)

- Ph.D. in Electrical Engineering and Computer Science, GPA: **3.95/4** – via 39 credits.
- Graduate level courses: Computer Vision, Pattern Recognition, Convex Optimization, Nonlinear Programming, Probability and Random Processes, Linear Algebra, Numerics of Imaging and Data Mining, Statistical Signal Processing, Real Analysis, etc.
- Advisor: Prof. Vishal Monga. http://signal.ee.psu.edu

Hanoi University of Science and Technology (HUST), Vietnam. — 2007–2012

- B.Sc., Electronics and Telecommunications. GPA: **3.51/4** – via 181 credits, Rank: **2/507**.
- Thesis: *Designing an FPGA-based IP camera system supporting MJPEG compression standard, applying on remote supervising and controlling systems.*

Technical Skills

- *Programming Languages*: C/C++, Python, Java, Javascript, VHDL, Verilog.
- *Technical Softwares*: MATLAB, OpenCV, Simulink.

Research Experience

- **Information Processing and Algorithms Laboratory (iPAL)** — Fall 2013–Present
  School of Electrical Engineering and Computer Science, The Pennsylvania State University.
  Implementations for the projects below were done in a mix of MATLAB and C/C++.
  - Medical Image Classification: Applications in histopathological image classification, disease diagnosis and cancer detection. One journal paper appeared in IEEE Transactions on Medical Imaging [IEEE Xplore]. One conference paper appeared in ISBI 2015 [IEEE Xplore]. One MATLAB toolbox with GUI published online [link].
  - Discriminative Dictionary Learning: Learning a sparsity-constrained Discriminative Dictionary for face, object and scene recognition. Research is in progress, conference papers accpeted to ICIP 2016. One MATLAB toolbox for Sparse Coding and Dictionary Learning will appear online soon.
- **Embedded Systems and Reconfigurable Computing Laboratory** — 2009–2012
  School of Electronics and Communications, Hanoi University of Science and Technology.
  Implementations for the project below were done in a mix of VHDL/Verilog and C/C++.
  - FPGA-based Intellectual Property camera systems: Applications in remote supervising and controlling systems. The whole system is a combination of an ARM-based Board and a Xilinx platform.
  - Secure Remote Updating Bitstream: Introduce bitstream encryption and authentication solutions in partial reconfigurable embedded systems to improve their flexibility. One conference paper appeared in IEEE ComManTEL 2013 [IEEE Xplore].

Selected Publications

1. **Tiep. H. Vu**, V. Monga. "Learning a low-rank shared dictionary for image classification". *IEEE International Conference on Image Processing (ICIP)*, 2016.
2. **Tiep. H. Vu**, H. S. Mousavi, V. Monga, UK A. Rao, G Rao. "Histopathological Image Classification using Discriminative Feature-oriented Dictionary Learning". *IEEE Transactions on Medical Imaging*, volume 35, issue 3, pages 738-751, March 2016. [IEEE Xplore].

3. **Tiep. H. Vu**, H. S. Mousavi, V. Monga, UK A. Rao, G Rao. "DFDL: Discriminative Feature-Oriented Dictionary Learning for Histopathological Image Classification". *IEEE International Symposium on Biomedical Imaging (ISBI)*, 2015 [IEEE Xplore].

4. Tran Thanh, **Vu Tiep**, Vu Tran, Pham Nam, Nguyen Cuong, "Secure Remote Updating of Bitstream in Partial Reconfigurable Embedded Systems based on FPGA". *IEEE ComManTEL*, pp. 152-156, 2013 [IEEE Xplore].

Honors and Awards

- ***First prizes*** in Vietnam Mathematics Olympiad for University Students organized by Vietnam Mathematical Society (Linear Algebra). 2010 and 2008
- ***Second prize*** in Vietnam Mathematics Olympiad for University Students organized by Vietnam Mathematical Society (Linear Algebra). 2009
- ***Leadership Award***, **FPT Center for Young Talents, FPT Corp.**. Dec. 2011
- ***Most Motivated Prize*** in TI Vietnam University MCU Design Contest (TI Cup North region), HUST and **Texas Instrument**. 2011
- ***Best Student*** of School of Electronics and Telecommunications, HUST 2009 and 2010
- ***Best Student Award*** in Panasonic Embedded Course, HUST and **Panasonic** Vietnam. 2011
- **Intel** Engineering Scholarship for Excellent Academic and Research Performance. 2010
- Odon Vallet Scholarship, Vietnam. 2006
- ***Third prizes*** in Vietnam Mathematics Olympiad organized by Ministry of Education and Training. 2007 and 2006
- ***First prizes*** in Thai Binh Provincial Mathematics contests for students. 2007, 2006, 2004, 2003, 2000 and 1999.

Teaching Experience

- Microprocessors Spring 2012
  - Tutoring students in hardware design techniques.
  - Grading homework assignments.

Memberships and Professional Activities

- Student member, the Institute of Electrical and Electronics Engineers (IEEE).
- Reviewer of IEEE Transactions on Image Processing (TIP).
- Reviewer of IEEE Signal Processing Letters (SPL).
- Reviewer of SPIE Journal of Electronic Imaging (JEI).

References

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