

Huy Hieu Pham | Curriculum Vitæ

Research Scientist in Computer Vision and Artificial Intelligence

🏠 N° 3 Nguyen Huy Tuong, Hanoi, Vietnam • 📞 +84987628857 • ✉ v.hieuph4@vinbdi.org 🌐
<https://huyhieupham.github.io/> • 🌐 <https://github.com/huyhieupham>

EDUCATION

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|-------------|--|
| 2016 ÷ 2019 | Ph.D. in Computer Science
Toulouse Computer Science Research Institute (IRIT) - The University of Toulouse & Cerema Research Center, France.
<u>Dissertation</u> : “ <i>Human Action Recognition in RGB-D Videos based on Deep Neural Networks</i> ”.
 Detailed description |
| 2010 ÷ 2015 | Bachelor of Engineering in Industrial Informatics
Center for Training of Excellent Students (CTES), Hanoi University of Science and Technology (HUST), Vietnam.
<u>Thesis</u> : “ <i>Obstacle Detection in Indoor Environment for Visually Impaired People</i> ”, done at the Université Grenoble Alpes, France with the maximum score of A+.
 Detailed description |

RESEARCH INTERESTS

My research interests lie in the intersection of Computer Vision and Machine/Deep Learning. Much of my research is about understanding the physical world (shape, depth, motion, object detection and recognition) from images and videos. I have also worked in Medical Imaging projects.

WORK EXPERIENCE

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| OCT. 2019 ÷ PRESENT | Research Scientist at the Vingroup Big Data Institute (VinBDI) <ul style="list-style-type: none">• Design and implement Computer Vision and Deep Learning approaches to solving particular medical imaging problems related to detection, segmentation and classification in medical imaging.• Construct and normalize large-scale medical datasets (X-ray, CT, MRI, etc).• Produce top tier technical/clinical publications and transfer ML/DL models into products.• Techniques & Tools: Pytorch, CNNs. |
| OCT. 2016 ÷ SEP. 2019 | Ph.D. Fellow at the Toulouse Computer Science Research Institute (IRIT) - The University of Toulouse & Cerema Research Center, Toulouse, France. <ul style="list-style-type: none">• Conduct research on video-based human action recognition using deep learning networks.• Proposed new 3D motion representations and deep learning frameworks for action analysis.• Techniques & Tools: CNNs, Python, Keras/TensorFlow, Kinect sensor, RGB-D data. |
| NOV. ÷ DEC. 2017 | Visiting Ph.D. Student at the Applied Artificial Intelligence Research Group, University Carlos III of Madrid, Madrid, Spain. <ul style="list-style-type: none">• Designed and optimized very deep CNNs for image recognition tasks.• Techniques & Tools: Inception-ResNet-(v1,v2), DenseNet, Python, Keras/TensorFlow, 3D data. |
| NOV. 2014÷ MAY 2015 | Research Intern in the AIR-COBOT project, led by AIRBUS Group and ICA Research Institute, Albi, France. <ul style="list-style-type: none">• Analyzed 3D point cloud for detection and characterization of defects on airplane surface.• Techniques & Tools: Object detection, 3D point cloud processing, PCL/C++, OpenCV/C++. |
| JULY ÷ OCT. 2015 | Research Engineer at the MICA International Research Center, Hanoi, Vietnam. <ul style="list-style-type: none">• Conducted research on object detection, 3D video analysis, and scene understanding.• Techniques & Tools: Object detection, RGB-D videos analysis, OpenCV/C++, PCL/C++. |
| FEB. ÷ JUNE 2015 | Research Intern at the AGIM Laboratory, Université Grenoble Alpes, Grenoble, France. <ul style="list-style-type: none">• Developed an obstacle detection and warning system for visually impaired people based on electrode matrix and mobile Kinect.• Techniques & Tools: 3D object segmentation, OpenCV/C++, PCL/C++, Kinect, RGB-D data. |

SCHOLARSHIPS AND AWARDS

- SEP. 2019 **Rank 1st** in the CheXpert competition, organized by Stanford University. More details about this project can be found at [VnExpress](#).
- JUL. 2018 **Silver Medal** (top 3% accuracy) for the TGS Salt Segmentation Challenge, Kaggle competition.
- SEP. 2016 **Ph.D. Scholarship** for an outstanding candidate from the Cerema Research Center, France.
- JAN. 2015 **Doctoral Travel Scholarship** from L'Université Fédérale Toulouse Midi-Pyrénées and Écoles des Docteurs, Toulouse, France.
- SEP. 2015 **Research Internship Scholarship** from the ICA Research Institute, France.
- JAN. 2015 **Graduate Internship Scholarship** from the Université Grenoble Alpes, France.

LANGUAGES

Native Vietnamese speaker and fluent in both French and English.

TECHNICAL SKILLS

COMPUTER VISION:	Experience with detection, tracking, classification & segmentation algorithms.
DEEP LEARNING:	Familiarity with state-of-the-art CNN architectures (e.g., VGG-Net, Inception, ResNet, Inception-ResNet-(v1,v2), DenseNet, Xception, NAS-Net, AutoML, etc.), LSTM-RNNs, and Temporal Convolutional Networks (TCN).
PROGRAMMING LANGUAGES:	Python, C/C++, MATLAB, and μ TeX2e.
LIBRARIES/Frameworks:	Keras/TensorFlow, OpenCV, NumPy, SciPy, Pandas, Scikit-learn, and Matplotlib.

SCIENTIFIC PUBLICATIONS

Journal publications

- [J-8] **Hieu H. Pham**, Tung T. Le, Dat Q. Tran, Dat T. Ngo, Ha Q. Nguyen A. Velastin. “*Interpreting chest X-rays via CNNs that exploit disease dependencies and uncertainty labels*” – Neurocomputing | [Accepted, to appear](#)
- [J-7] **Huy-Hieu Pham**, Houssam Salmane, Louahdi Khoudour, Alain Crouzil, Pablo Zegers, Sergio A. Velastin. “*A Unified Deep Framework for Joint 3D Pose Estimation and Action Recognition from a Single RGB Camera*” – Special Issue Camera as a Smart-Sensor (Volume 20, Issue 7), Intelligent Sensors 2020 | [Accepted](#)
- [J-6] **Huy-Hieu Pham**, Houssam Salmane, Louahdi Khoudour, Alain Crouzil, Pablo Zegers, Sergio A. Velastin. “*Spatio-Temporal Image Representation of 3D Skeletal Movements for View-Invariant Action Recognition with Deep Convolutional Neural Networks*” – Special Issue “Deep Learning -Based Image Sensors”, Intelligent Sensors | [Accepted](#)
- [J-5] **Huy-Hieu Pham**, Louahdi Khoudour, Alain Crouzil, Pablo Zegers, Sergio A. Velastin. “*Learning to Recognize 3D Human Action from A New Skeleton-based Representation Using Deep Convolutional Neural Networks*” – The IET Computer Vision Journal (IET 2018) | [Accepted](#)
- [J-4] **Huy-Hieu Pham**, Louahdi Khoudour, Alain Crouzil, Pablo Zegers, Sergio A. Velastin. “*Exploiting Deep Residual Networks for Human Action Recognition from Skeletal Data*” – The Computer Vision and Image Understanding Journal, Vol. 170 (51-66), 2018 (CVIU 2018) | [.pdf](#)
- [J-3] Igor Jovancevic, **Huy-Hieu Pham**, Jean-José Orteu, Rémi Gilblas, Jacques Harvent, Xavier Maurice, Ludovic Brèthes. “*3D Point Cloud Analysis for Detection and Characterization of Defects on Airplane Exterior Surface*” – Journal of Nondestructive Evaluation, Vol. 36 (74), 2017 (JNE 2017) | [.pdf](#)
- [J-2] Igor Jovancevic, **Huy-Hieu Pham**, Jean-José Orteu, Rémi Gilblas, Jacques Harvent, Xavier Maurice, Ludovic Brèthes. “*Détection et Caractérisation de Défauts de Surface par Analyse des Nuages de Points 3D Fournis par Un Scanner*” – La revue Instrumentation, Mesure, Métrologie, Vol. 16 (1-4), 2017 (I2M 2017) | [.pdf](#)
- [J-1] **Huy-Hieu Pham**, Thi Lan Le, and Nicolas Vuillerme. “*Real-Time Obstacle Detection System in Indoor Environment for Visually Impaired Sensor Using Microsoft Kinect*” – The Journal of Sensor, Vol. 11 (1-13), 2016 (SCIE 2016) | [.pdf](#)

Peer-reviewed conference publications

- [C-3] **Hieu H. Pham**, Tung T. Le, Dat Q. Tran, Dat T. Ngo, Ha Q. Nguyen. “*Interpreting chest X-rays via CNNs that exploit disease dependencies and uncertainty labels*” – Proceedings of Medical Imaging with Deep Learning ([MIDL 2020](#)) | [.pdf](#)
- [C-2] **Huy-Hieu Pham**, Louahdi Khoudour, Alain Crouzil, Pablo Zegers, Sergio A. Velastin. “*Skeleton to Color Map: A Novel Representation for 3D Action Recognition with Inception Residual Networks*” – The 25th IEEE International Conference on Image Processing 7-10 October, 2018, Athens, Greece ([ICIP 2018](#)) | [.pdf](#)
- [C-1] **Huy-Hieu Pham**, Louahdi Khoudour, Alain Crouzil, Pablo Zegers, Sergio A. Velastin. “*Learning and Recognizing Human Action from Skeleton Movement with Deep Residual Neural Networks*” – The 8th International Conference of Pattern Recognition Systems, 11-13 July, 2017, Madrid, Spain ([ICPRS 2017](#)) | [.pdf](#)

Preprints

- [P-1] **Huy-Hieu Pham**, Houssam Salmane, Louahdi Khoudour, Alain Crouzil, Pablo Zegers, Sergio A. Velastin. “*Deep Learning Architectures for Video-based Human Action Recognition: Challenges, Achievements, and New Frontiers*” | [arXiv submit/2519965](#)

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REVIEW ACTIVITIES

Journal of Electronic Imaging ([JEI](#))

IET Computer Vision Journal ([IET-CVI](#))

INVITED TALKS, WORKSHOPS & SUMMER SCHOOL

- DEC. 2018 Invited speaker, “*Applied Machine Learning Days*” at the French Institute of Science and Technology for Transport, Development and Networks ([IFSTTAR](#)), Paris, France.
- NOV. 2017 Invited speaker, “*An Introduction to Deep Learning for Image and Video Interpretation*” at the University Carlos III of Madrid ([UC3M](#)), Madrid, Spain.
- JULY 2018 “*The 2nd International Summer School on Deep Learning*”, Genova, Italy.
- DEC. 2017 “*Workshop on Face, Action and Behavior Recognition*”, Télécom [ParisTech](#), Paris, France.
- JUNE 2018 “*Deep Learning Workshop*”, Toulouse Computer Science Research Institute ([IRIT](#)), Toulouse, France.

TEACHING

- FALL 2017 “*Deep Learning for Video Analysis*” at the University Carlos III of Madrid ([UC3M](#)), Spain.
- FALL 2018 “*Introduction to Programming and Algorithms in Python*” at the Paul Sabatier University ([UPS](#)), France.

SCIENTIFIC SOCIETIES

I am a member of the IEEE Computer Society and the French Information, Signal, Image et Vision Society.

REFERENCES

References available upon request.

Last updated: June 22, 2020