

Hieu Pham, Ph.D.

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Associate Director, VinUni-Illinois Smart Health Center, VinUniversity
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EDUCATION

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| SEPTEMBER 2019 | Ph.D. in Computer Science
Toulouse Computer Science Research Institute (IRIT), University of Toulouse, France.
<u>Dissertation</u> : “Human Action Recognition in RGB-D Videos based on Deep Neural Networks”. |
| JULY 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> : “Obstacle Detection in Indoor Environment for Visually Impaired People”, Université Grenoble Alpes, France. |

RESEARCH INTERESTS

Computer Vision, Machine/Deep Learning, Artificial Intelligence, Medical Image Analysis, Bioimaging, Smart Health.

ACADEMIC & PROFESSIONAL EXPERIENCE

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| OTC. 2022 ÷
PRESENT | Assistant Professor , College of Engineering and Computer Science, VinUniversity <ul style="list-style-type: none">• Instructor, Operating Systems (COMP2040), Fall 2022.• Instructor, Software Construction (COMP2030), Fall 2022.• Instructor, Computer Systems Programming (ELEC2022), Spring 2022.• Instructor, Object-Oriented Programming (COMP1020), Spring 2022.• Instructor, Introduction to Programming (COMP1010), Fall 2021. |
| NOV. 2021 ÷
JUN. 2021 | Associate Director , VinUni-Illinois Smart Health Center, VinUniversity <ul style="list-style-type: none">• Developing state-of-the-art sensing and digital technologies to provide widely accessible health monitoring, screening, and diagnostics for people all over the world. Learn more about us at https://smarthealth.vinuni.edu.vn/ |
| SEP. 2020 ÷
JUN. 2021 | Affiliated Faculty, Assistant Professor , CECS, VinUniversity <ul style="list-style-type: none">• Supervise and mentor research assistants at the Smart Health Center.• Construct syllabus and deliver lectures for the “Introduction to Machine Learning” course (CECS1020) – https://vinuni.instructure.com/courses/460.• Conduct research in Medical Imaging Analysis and AI-based Smart Healthcare.• Organize seminar series on AI and Smart Healthcare.• Promote scientific cooperation between VinUni and other research institutions (VinBigdata, HUST, VNU, EFFL). |
| OCT. 2019 ÷
OCT. 2021 | Research Scientist & Head of Fundamental Research , Department of Medical Center, VinBigdata <ul style="list-style-type: none">• Being in charge of fundamental research on AI and Medical Imaging, leading the research team to produce high-quality, international standard research outputs (https://vindr.ai/).• Train and supervise AI research interns (15 peoples)• Construct and normalize large-scale medical datasets (X-ray, CT, MRI, etc).• Design and implement Computer Vision and Deep Learning approaches to solving particular medical imaging problems related to detection, segmentation and classification in medical imaging.• Produce top tier technical/clinical publications and transfer ML/DL models into products. |
| OCT. 2016 ÷
SEP. 2019 | Ph.D. Researcher at the Toulouse Computer Science Research Institute (IRIT), University of Toulouse & Cerema Research Center, Toulouse, France. <ul style="list-style-type: none">• Conducted studies on video-based human action recognition using deep learning networks.• Proposed new 3D motion representations and deep learning frameworks for action analysis. |

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.
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.
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.
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.

TEACHING EXPERIENCE

SPRING 2021	Instructor at the CECS, VinUni. <ul style="list-style-type: none"> • Course: COMP2040, COMP2030, ELEC2022, COMP1020 and COMP1010 • Program: CECS undergraduate • Responsibilities: Developed syllabus and delivered lectures for 50 CECS VinUni students.
FALL 2019	Guest Lecturer , University Carlos III of Madrid, Spain. <ul style="list-style-type: none"> • Course: <i>"An introduction to Deep Learning for Image and Video Interpretation"</i> • Program: Graduate, Master's Degree in Computer Science and Technology • Responsibilities: Developed and delivered a series of lectures on Deep Learning for Video Analysis, including assignments and exam questions for 30 Master's degree students.
FALL 2018	Teaching Assistant , University of Toulouse, France <ul style="list-style-type: none"> • Course: <i>"Introduction to Programming and Algorithms in Python"</i> • Program: CS undergraduate • Responsibilities: Delivered weekly one-hour lectures (30 students) and one weekly three hour laboratory session (15 students) for two semesters. Integrated Problem-Based Learning (PBL) activities during the course.

STUDENTS ADVISING/MENTORING

MAR. 2022	Mentor for Phan Nhat Huy , VinUni undergraduate student (EE). Second Best Poster Presentation, CECS Day, Spring 2022
MAR. 2022	Mentor for Mai Quang Tuan , VinUni undergraduate student, (EE). Best oral presentation, CECS Day, Spring 2022
MAR. 2022	Mentor for Phan Thi Hien Chi , VinUni undergraduate student (EE). Best poster presentation, CECS Day, Spring 2022
JUL. 2020	Mentor for Tung T., Le , VNU-UET undergraduate student. Now CS Ph.D. student @ University of California Irvine Irvine, CA, USA. Project: <i>"Develop and evaluate a deep learning system for the classification of chest diseases from X-ray images"</i> . Research outcome: A journal publication on Neurocomputing
FEB. 2021	Mentor for Hieu T., Nguyen , HUST undergraduate student. Now CS PhD student @ Northeastern University, USA. Project: <i>"Develop and evaluate a deep learning system for bone X-ray interpretation"</i> . Research outcome: A new benchmark spine X-ray dataset (10,468 images) and an accepted paper to MICCAI conference (A* conference on medical imaging)
JAN. 2021	Mentor for Hoang C., Nguyen , KAIST undergraduate student (Gold IMO 2017). Project: <i>"Develop and evaluate a deep learning system for rib labeling from PA view CXR images"</i> . Research outcome: A new, annotated CXR dataset for individual rib segmentation and an accepted paper to International Conference on Medical Imaging with Deep Learning 2021
MAR. 2021	Mentor for Dung V., Do , HUST undergraduate student. Now @ VinBrain. Project: <i>"Classification of body parts on X-ray images"</i> . Research outcome: An accepted paper to ICCV Workshop 2021
MAR. 2021	Mentor for Thanh T., Tran , HUST undergraduate student. Now @ VinBigData. Project: <i>"AI solution for detecting abnormalities on pediatric chest X-ray images"</i> . Research outcome: A benchmark CXR dataset for pediatric abnormal detection and an accepted paper to ICCV Workshop. 2021

AWARDS AND HONORS

SEP. 2022	AI Awards 2022
SEP. 2021	DAAD Fellowship 2021 for outstanding researcher in AI and Medical Imaging Research, Federal Ministry of Education and Research (Germany)
SEP. 2019	Rank 1st in the CheXpert competition, organized by Stanford University. More details about this project can be found at VnExpress .
SEP. 2016	Ph.D. Fellowship 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.

RESEARCH GRANTS

Contributions to Ongoing Funded Research

AUG. 2021 – MAY 2023	VAIPE: AI-assisted IoT-enabled smart, optimal, and Protective hEalthcare monitoring and supporting system for Vietnamese <ul style="list-style-type: none">• Principal Investigators: Minh Do (VinUni/UIUC), Hieu H. Pham (VinUni), Phi Le Nguyen (HUST), Hung Nguyen (HUST), My Thai (University of Florida), Duc Tran (University of Massachusetts).• Role: Co-author. I provided preliminary research idea and wrote the grant with co-authors.• Total funding: \$220,000
AUG. 2019 – MAY 2021	Building large-scale medical imaging datasets for developing AI-based computer-aided detection/diagnosis systems. <ul style="list-style-type: none">• Principal Investigators: Ha Q. Nguyen (VinBigdata), Hieu H. Pham (VinBigdata), Linh T. Le (HMU Hospital), Lam Khanh (108 Hospital).• Role: Co-author. I defined the data collection and normalization process.• Total funding: \$200,000

AUG. 2019 –
MAY 2021

Application of Artificial Intelligence in Medical Image Analysis

- Principal Investigators: Lam Khanh (108 Hospital), Ha Q. Nguyen (VinBigdata), Hieu H. Pham (VinBigdata)
- Role: Co-author. I developed AI solutions for several modalities (chest X-ray, MSK, chest CT)
- Total funding: \$120,000

LANGUAGES

Native Vietnamese speaker and fluent in both French and English.

SCIENTIFIC PUBLICATIONS (H-INDEX: 10)

Journal publications

- [J-13] Thao Nguyen, Tam M Vo, Thang V Nguyen, **Hieu H Pham***, Ha Q Nguyen. “*Learning to diagnose common thorax diseases on chest radiographs from radiology reports in Vietnamese*” – **PLOS One**, 2022 | [Full paper](#)
- [J-12] Ngoc H Nguyen, **Hieu H Pham***, Thanh T Tran, Tuan NM Nguyen, Ha Q Nguyen. “*VinDr-PCXR: An open, large-scale chest radiograph dataset for interpretation of common thoracic diseases in children*” – **Scientific Data (Nature)**, 2022 (Accepted) | [Preprint](#)
- [J-11] Ngoc Huy Nguyen, Ha Quy Nguyen, Nghia Trung Nguyen, Thang Viet Nguyen, Hieu Huy Pham, Tuan Ngoc-Minh Nguyen. “*A clinical validation of VinDr-CXR, an AI system for detecting abnormal chest radiographs*” – **Frontiers in Digital Health (2022)** | [Accepted \(.pdf\)](#)
- [J-10] Ha Q. Nguyen, Khanh Lam, Linh T. Le, **Hieu H. Pham**, Dat Q. Tran, Dung B. Nguyen, Dung D. Le, Chi M. Pham, Hang T. T. Tong, Diep H. Dinh, Cuong D. Do, Luu T. Doan, Cuong N. Nguyen, Binh T. Nguyen, Que V. Nguyen, Au D. Hoang, Hien N. Phan, Anh T. Nguyen, Phuong H. Ho, Dat T. Ngo, Nghia T. Nguyen, Nhan T. Nguyen, Minh Dao, Van Vu. “*VinDr-CXR: An open dataset of chest X-rays with radiologist’s annotations*” – **Nature Scientific Data (2022)** | [Accepted \(.pdf\)](#)
- [J-9] Binh T. Dao, Thang V. Nguyen, Hieu H. Pham, Ha Q. Nguyen. “*Phase recognition in contrast-enhanced CT scans based on deep learning and random sampling*” – **Medical Physics (2022)** | [.pdf](#)
- [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**
- [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 (V.20,7), **Intelligent Sensors**
- [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**
- [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**,

- [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-10] Tung-Trong Nguyen, **Hieu H Pham***, Phi Le Nguyen, Thanh Hung Nguyen, Minh Do. “Multi-stream Fusion for Class Incremental Learning in Pill Image Classification” – **Proceedings of the Asian Conference on Computer Vision (ECCV2022)** | [Full paper](#)
- [C-9] Nang Hung Nguyen, Phi Le Nguyen, Duc Long Nguyen, Trung Thanh Nguyen, Thuy Dung Nguyen, Thanh Hung Nguyen, Huy Hieu Pham, Truong Thao Nguyen. “FedDRL: Deep Reinforcement Learning-based Adaptive Aggregation for Non-IID Data in Federated Learning” – **The 51st International Conference on Parallel Processing (ICPP 2022)**.
- [C-8] Huyen TX Nguyen, Sam B Tran, Dung B Nguyen, **Hieu H. Pham**, and Ha Q Nguyen. “A novel multi-view deep learning approach for BI-RADS and density assessment of mammograms Convolutional Neural Networks” – **The 44th Annual International Conference of the IEEE Engineering in Medicine and Biology Society (2022 IEEE EMBC)** .
- [C-7] Thanh T. Tran, **Hieu H. Pham**, Thang V. Nguyen, Tung T. Le, Hieu T. Nguyen, Ha Q. Nguyen. “Learning to Automatically Diagnose Multiple Diseases in Pediatric Chest Radiographs Using Deep Convolutional Neural Networks” – **2021 IEEE/CVF International Conference on Computer Vision Workshops (ICCV Workshop 2021)**.
- [C-6] Thanh T. Tran, **Hieu H. Pham**, Thang V. Nguyen, Tung T. Le, Hieu T. Nguyen, Ha Q. Nguyen. “Learning to Automatically Diagnose Multiple Diseases in Pediatric Chest Radiographs Using Deep Convolutional Neural Networks” – **2021 IEEE/CVF International Conference on Computer Vision Workshops (ICCV Workshop 2021)**.
- [C-5] **Hieu H. Pham**, Dung V. Do, Ha Q. Nguyen. “DICOM Imaging Router: An Open Deep Learning Framework for Classification of Body Parts from DICOM X-ray Scans” – **2021 IEEE/CVF International Conference on Computer Vision Workshops (ICCV Workshop 2021)**.
- [C-5] Hoang C. Nguyen, Tung T. Le, **Hieu H. Pham**, Ha Q. Nguyen. “VinDr-RibCXR: A Benchmark Dataset for Automatic Segmentation and Labeling of Individual Ribs on Chest X-rays” – **Medical Imaging with Deep Learning (MIDL 2021)**.
- [C-4] Hieu T. Nguyen, **Hieu H. Pham**, Nghia T. Nguyen, Ha Q. Nguyen, Minh Dao, Van Vu. “A deep learning framework for spinal lesions detection and classification from radiographs” – **International Conference on Medical Image Computing and Computer Assisted Intervention (MICCAI 2021)**.
- [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](#)

I am the author, co-author of about 40 scientific articles appeared in top-tier conferences and journals in Computer Vision and Medical Imaging such as Scientific Data (Nature), PLOS One, Frontiers in Digital Health, Medical Physics, Computer Vision and Image Understanding, Neurocomputing, MICCAI, MIDL, ICIP, ICCV, ECCV, and ACCV. For a complete list of publications, please refer to my [Google Scholar](#) (about 600 citations, h-index = 10, h-10 index = 10 on January 5, 2023).

INDUSTRIAL EXPERIENCE

2015 - 2016 Research Intern, Airbus Group, Toulouse, France.

BOOKS AND BOOK CHAPTERS

PATENTS

Ha Q. Nguyen, Long T. Dam, **Hieu H. Pham**, Dung N. Ba, Dat T. Ngo. “*PACS-AI: Integrating AI-based medical image management solution to support clinicians in real-time imaging diagnosis*” - Intellectual Property Office of Viet Nam (IP Viet Nam). Pending.

REVIEW ACTIVITIES

Reviewer, Reviewer, The ACM Transactions on Multimedia Computing Communications and Applications (TOMM)

Reviewer, Reviewer, The International Conference on Information Processing in Computer-Assisted Interventions (IPCAI 2023)

Reviewer, Reviewer, IEEE/CVF Conference on Computer Vision and Pattern Recognition 2023 (CVPR 2023)

Reviewer, Reviewer, IEEE International Conference on Knowledge and Systems Engineering (IEEE KSE 2022)

Reviewer, IEEE Journal of Selected Topics in Signal Processing

Reviewer, IEEE/CVF Conference on Computer Vision and Pattern Recognition 2022 (CVPR2022)

Reviewer, Journal of Electronic Imaging

Reviewer, European Conference on Computer Vision (ECCV 2022)

Reviewer, International Conference on Medical Image Computing and Computer Assisted Intervention (MICCAI 2022)

Reviewer, IEEE Journal of Biomedical and Health Informatics (JBHI)

Reviewer, Nature Scientific Reports

Reviewer, IET Computer Vision Journal

Reviewer, International Conference on Computer Vision (ICCV)

INVITED TALKS

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.

SCIENTIFIC SOCIETIES

IEEE Member

Member of the IEEE Computer Society and the French Information, Signal, Image et Vision Society.

REFERENCES

Minh Do, ScD, UIUC

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Professor, College of Engineering and Computer Science, VinUniversity

Professor, Department of Electrical and Computer Engineering, University of Illinois at Urbana-Champaign

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