

Curriculum Vitae

Name: Hammadi Nait Charif
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Research Interest

Education

- 04/95-03/98 PhD in Information & Computer Sciences, Graduate School of Sciences & Technology, Chiba University, Japan. *PhD Thesis:* "Design of Fault Tolerant Feedforward Neural Networks"
- 09/87-06/90 Master of Engineering (Ingenieur d'Etat), Electronic Engineering, Ecole Hassania (Engineering Faculty), Casablanca, Morocco. *MSc Thesis:* "Adaptive Control of Phosphate Industrial Dryer"
- 09/85-06/87 Math Sup./Spe, Advanced Mathematics, Lycee Mohamed V, Casablanca, Morocco.

Research Interest

Virtual/Augmented Reality, Computer Graphics, Image Processing, Computer Vision, Machine Learning, and Human computer Interaction.

Teaching:

- 02/06-to-date Principal Academic, Bournemouth University
Program coordinator for the MSc in Computer Animation & Visual Effect
Teaching: Object Oriented Programming (C++), Mathematics for Computer Graphics, Personal Enquiry, Thesis/projects supervision both MSc and PhD levels.
- 09/03-05/05 Teaching Fellow, Division of Applied Computing, University of Dundee, lecturing & lab supervision: Computer Vision, Computer Systems, Digital Signal Processing, Human Computer Interaction.
- 04/09-09/01 Associate Professor, Electronic Engineering Department Mohamed I University, Morocco, preparation and delivery of undergraduate and postgraduate courses: Algorithms & Data Structure, Computer Networks, Neural Networks, Image Processing, Object Oriented Programming (C++), Electronic Circuit, Design and analysis, Mathematics (Linear Algebra & Differential Equations).
- 04/96-03/97 Teaching Assistant, Department of Information & Computer Sciences, Chiba University, Japan, Tutoring and workshops for master students: Fault Tolerant Computing, Artificial Neural Networks.
- 04/91-03/94 Assistant Professor, Electronic Engineering Department, Mohamed I University, Morocco Preparation and delivery of undergraduate courses: Algorithm & Data structures, Electronic Circuit, Design and analysis.

Research:

- 02/06-to-date Principal, Bournemouth University
My research activities include Computer Vision, Image processing Intelligent Adaptive Systems, and Virtual reality. Some ongoing projects are VR Hip replacement simulator , tracking vertebrate in spine X-Ray videos for back-pain

management, knee MRI image segmentation.

- 06/05-02/06 Postdoc Research Assistant, Royal Holloway, London University
Research on “reverse engineering the human visual system” project developing search algorithms based on the study of human pre-attentive and goal-directed visual search for tasks such as object recognition and tracking
- 10/01-05/05 Postdoc Research Fellow, Dundee University.
Worked on EPSRC EQUAL project “Advanced Sensors for Supportive Home Environments for the Elderly”, Department of Applied Computing, University of Dundee. I developed a computer vision system that monitors a person in their home environment, learns spatial context models and detects unusual inactivity (i.e. falls).
- 06/99-08/99 Fulbright Visiting Scholar, Department of Electrical and Computer Engineering, Michigan State University, USA. Worked on neural networks based image processing.
- 04/98-09/01 Electrical and Electronic Engineering Department, Mohamed I University, Morocco. Research on neural network control, image processing, and pattern recognition.
- 04/95-03/98 PhD student, Graduate school of Science & Technology, Chiba University, Japan. My research area was artificial neural networks and fault tolerant computing.

Other professional activities

Paper review for different international journals such as Pattern Analysis & Application, Neurocomputing and International Journal of Imaging.

Member of International Program Committee of different international conferences such as International Symposium on Visual Computing (ISVC), International Conference on Intelligent Human Computer Interaction, International Conference on Computer Vision Theory and Applications and the International Conference on Health Informatics (HEALTHINF)

Grants & Awards

- 2019** PhD Studentship, Studentship, Augmented Reality Food Visualisation for Hospitality Industry, funded by Checkfer Ltd and Bournemouth University, **£48K**
- 2017** PhD Studentship, Studentship, VR Hip replacement Simulator, funded by Bournemouth University, **£48K**
- 2011/2012** Knowledge Transfer Partnerships (KTP) with Ecrebo Ltd. to develop and implement a software solution that will enable the Company’s product to operate successfully with point of sales software and hardware. **(£40K)**
- 1999** Fulbright Visiting Scholar, Department of Electrical and Computer Engineering, Michigan State University, USA. **(\$10K)**
- 1994-98** Monbusho Research Scholarship, Chiba University, Japan, Research in the design of fault tolerant neural networks in pattern recognition applications **(£62K)**

Publications

1. K Adhikari, H Bouchachia, H Nait-Charif, Long Short-Term Memory Networks Based Fall Detection Using Unified Pose Estimation, The 12th International Conference on Machine Vision (ICMV 2019), Amsterdam, The Netherlands, 2019.
2. CM Glynos, OO Aina, H Nait-Charif Assessing the Efficacy of the Dynamic Eye Misalignment Retroversion System (DEMRS) Prototype with Normal and Strabismus Subjects" 4th International Conference on Biomedical Imaging, Signal Processing, 2019
3. Y. Ioannidis and H Nait-Charif, Over time RF tting for Jitter Free 3D Vertebra Reconstruction from Video Fluoroscopy, 18th International Conference on Computer Analysis of Images and Patterns, Sep 2019
4. M. Aguilera-Canon, T. Wainwright, X. Yang, H. Nait-Charif, Mixed Reality-Based Simulator for Training on Imageless Navigation Skills in Total Hip Replacement Procedures, International Conference on E-Learning and Games, July 2017.
5. E Marimón, H Nait-Charif, A Khan, PA Marsden, O Diaz Scatter reduction for grid-less mammography using the convolution-based image post-processing technique, Medical Imaging 2017: Physics of Medical Imaging 10132, 101324D
6. K Adhikari, H Bouchachia, H Nait-Charif Activity recognition for indoor fall detection using convolutional neural network Machine Vision Applications (MVA), 2017 Fifteenth IAPR International
7. CM Glynos, OO Aina, H Nait-Charif Dynamic eye misalignment retroversion system (DEMRS)Applied Imagery Pattern Recognition Workshop (AIPR), 2016 IEEE, 1-7
8. E Marimon, H Nait-Charif, A Khan, PA Marsden, O Diaz Detailed analysis of scatter contribution from different simulated geometries of X-ray detectors,International Workshop on Digital Mammography, 203-210
9. R. Poudel, JJ Zhang, D Liugfdsg, H. Nait-Charif, "Skin Color Detection Using Region-Based Approach", International Journal of Image Processing (IJIP) 7 (4), pp. 385-394, 2013.
10. R. Poudel, JAS Fonseca, JJ Zhang, H Nait-Charif, "A Unified Framework for 3D Hand Tracking" Advances in Visual Computing, 129-139, Springer, 2013
11. Nait-Charif H, Breen A, Thompson P "Vertebrae Tracking in Lumbar Spinal Video-Fluoroscopy Using Particle Filters with Semi-automatic Initialisation",International Symposium on Visual Computing (ISVC2012), Crete, Greece, 16 Jul 2012.
12. A. Somasekharan, H. Nait-Charif and J. J. Zhang, "Generating Real-time Muscle Activations for Skeletal Hand Motion: An Evolutionary Approach", Computer Graphics International, CGI2012,Bournemouth, UK, June 2012.

13. R. Poudel, H. Nait-Charif, J. J. Zhang, D. Liu, "Region-Based based skin color detection", International Conference on Computer Vision Theory and Applications, Rome, Italy, Feb. 2012.
14. H. Nait-Charif "Complex-Valued Neural Networks Fault Tolerance in Pattern Classification Applications", Global Congress on Intelligent Systems, Wuhan, China, December (GCIS 2010).
15. T. Taleb, D. Bottazzi, M. Guizani, and H. Nait-Charif, "ANGELAH: A Framework for Assisting Elders At Home", IEEE J. on Selected Areas in Communications, vol. 27(4), pp. 480-494, 2009.
16. Z. Xiao, H. Nait-Charif and J. J. Zhang, "Real time automatic skeleton and motion estimation for character animation", Computer Animation and Virtual Worlds journal Vol. 20, no. 5-6, pp. 523-531, Feb. 2009
17. Taleb, T., Bottazzi, D., Nait-Charif, H. An Advanced Home ElderCare Service, International Conference on Health Informatics, Porto, Portugal, January 2009.
18. T. Taleb, D. Bottazzi and H. Nait-Charif, An Advanced Home ElderCare Service, International Conference on Health Informatics, Porto, Portugal, January 2009.
19. Z. Xiao, H. Nait-Charif and J. J. Zhang, "Automatic Estimation of Skeletal Motion from Optical Motion Capture Data", International Workshop on Motion in Games, June 2008.
20. S. McKenna & H. Nait-Charif, "Efficient Tracking of Human Motion using Auxiliary Particle Filters and Iterated Likelihood Weighting", Image and Vision Computing Journal, 25(6), pp 852-862, June 2007.
21. H. Nait-Charif and S. McKenna, "Tracking the activity of participants in a meeting", Machine Vision and Applications, pp.83-93, May 2006.
22. S. McKenna and H. Nait-Charif, "Summarizing Contextual Activity and Detecting Unusual Inactivity in Supportive Home Environment", Pattern Analysis and Applications Journal. Published online: 20 May 2005
23. S. McKenna, H. Nait-Charif and T. Frank, "Video Understanding for Laparoscopic Surgery: Instrument Tracking", Image and Vision Computing New Zealand Conference, Dunedin, New Zealand, November 2005.
24. R. Aboutni, M. ElHitmy, E. M. Jaara, H. Nait-Charif, "Impact Of Texture Images Compression Using Discrete Cosine Transform On The Texture Parameters", International Conference on Pattern Recognition & Information Processing, Minsk, Belarus, May 2005.
25. H. Nait-Charif and S. J. McKenna, "Activity Summarisation and Fall Detection in a Supportive Home Environment", International Conference on Pattern Recognition (ICPR), Cambridge, vol. 4, pp. 323-326, August 2004.
26. S. J. McKenna and H. Nait-Charif, "Learning Spatial Context from Tracking using Penalized Likelihood Estimation", International Conference on Pattern Recognition (ICPR), Cambridge, vol. 4, pp. 138-141, August 2004.
27. H. Nait-Charif and S. J. McKenna, "Tracking Poorly Modeled Motion Using Particle Filters with Iterated Likelihood Weighting", Asian Conference on Computer Vision

Systems (ACCV04), Jeju, Korea, pp. 156-161, January, 2004.

28. S. McKenna, H. Nait-Charif, F. Marquies-Faulkes and A. Newel, "Activity Monitoring for Independent Living using Ceiling-Mounted Visual Sensors", International Conference on Aging, Disability and Independence, December 2003, Virginia, USA
29. H. Nait-Charif and S. McKenna, "Head Tracking and Action Recognition in a Smart Meeting Room", IEEE International Workshop on Performance Evaluation of Tracking and Surveillance (PETS-ICVS), Graz, Austria, pp. 24-31, March, 2003.
30. M. Nasri, R. Aboutni, M. El Hitmy, H. Nait-Charif, H. Jender, "Cascade system, genetic algorithm-Multilayer neural network for a supervised classification of texture images", Third workshop on Physics in Signal and Image Processing, Grenoble, France 29-31 January, 2003.
31. M. I. H. Bhuiyan, M. K. Hasan, M. A. Haque, and H. Nait-Charif, "A robust method for image compression using dynamically constructive neural network", Sixth International Symposium on Signal Processing and its applications (IEEE ISSPA), pp.525-528, August 14-16, 2001, Kuala Lumpur, Malaysia.
32. Md. I. H. Bhuiyan, Md. K. Hassan, H. Nait-Charif, T. Yahagi "Image Compression with Neural Networks Using Dynamic Construction Algorithm", J. of Signal Processing, vol. 5, no 6, pp 445-454, November 2001.
33. E. Daoudi, E. Jaara and H. Nait-Charif, "Parallélisation de la compression d'Image", (Parallelization of Neural Network-based Image Compression), *Reseaux et Systeme Repartis Journal*, pp. 361-369, January 2001, Hermes Science Edition (in French).
34. S. Zouggar, H. Nait-Charif, M. Azizi, "Neural Control and Transient Analysis of the LCL-Type Resonant Converter", *European Physical Journal Applied Physics EPJ*, vol. 11, n°. 1, July 2000, pp: 21-27.
35. H. Nait-Charif and F. Salam, "Neural Networks-based Image Compression System," The 43rd IEEE Midwest Symposium on Circuits and Systems, Lansing, MI, pp. 446-449, August 2000.
36. E. Daoudi, E. Jaara and H. Nait Charif, "Parallel Methods for Image Compression Using Multilayer Neural Networks", *Int. Conf. on Artificial and Computational Intelligence for Decision, Control and Automation in Eng. and Industrial Applications ACIDCA'2000 Monastir, Tunisia*, pp. 15-20, March 2000.
37. S. Zouggar, H. Nait-Charif and M. Azizi, "Dynamic Analysis and Control Design of the LCL Type Resonant Converter' *Int. Conf. on Artificial and Computational Intelligence for Decision, Control and Automation in Eng. and Industrial Applications ACIDCA'2000 Monastir, Tunisia*, 22-24 March 2000.
38. H. Ouriachi, D. Hamad, H. Nait-Charif and M. Barboucha, "Unsupervised Classification Using Evolutionary Programming Approach and Akaike Criteria", 14th Int. Symposium on Computers and Information Sciences (ISCIS99), Izmir, Turkey.
39. S. Zouggar, H. Nait-Charif and M. Azizi, "Neural Control and Transient Analysis of the LCL Type Resonant Converter", *Int. Conf. Engineering of Modern Electric Systems (EMES'99) Romania*, 1999.
40. S. Zouggar, H. Nait Charif, G. Rojat and M. Azizi, "Dynamic Analysis and Control Design of the LCL Type Resonant Converter", 8th European Conference on Power

41. H. Nait Charif, T. Ohmameuda, K. Kaneko, and H. Ito, "Dynamic Constructive Fault Tolerant Algorithm for Feedforward Neural Networks", IEICE Trans. Information and Systems, vol. E81-D, no. 1, pp. 115-123, January 1998.
42. H. Nait Charif and H. Ito, "On the Activation Function and Fault Tolerance in Feedforward Neural Networks", IEICE Trans. Information and Systems, vol. E81-D, no. 1, pp. 66-72, January 1998.
43. H. Nait-Charif and H. Ito, "Improving the Performance of Feedforward Neural Networks by Noise Injection into Hidden Neurons", Int. Journal of Intelligent and Robotic Systems (Kluwer), vol. 21, no. 2, pp. 103,115, February 1998.
44. H. Nait-Charif and H. Ito, "A Learning Algorithm for Fault Tolerant Feedforward Neural Networks", IEICE Trans. Information and Systems, vol. E80-D, no. 1, pp. 21-27, January 1997.
45. H. Nait-Charif, T. Ohmameuda, K. Kaneko, and H. Ito: "Fault Tolerant Constructive Algorithm for Feedforward Neural Networks", Proc. of the 1997 Pacific Rim International Symposium on Fault Tolerant Systems (PRFTS'97), pp. 215-220 1997.
46. H. Nait-Charif and H. Ito, "Noise Injection into Hidden Neurons: A Learning Technique for Enhancing the -Performance of Feedforward Neural Networks", Proc. of Int. Conf. on Neural Networks and Their Applications (NEURAP'97), pp. 245-251, Marseilles, March 1997.
47. H. Nait-Charif and H. Ito, "On the Activation Function and Fault Tolerance in Feedforward Neural Networks", Proc. of Int. Workshop on Dependability in Advanced Computing Paradigms, pp. 29-34, Hitachi, June 1996.
48. H. Nait Charif and H. Ito, "A Fault Tolerant Learning Algorithm for Feedforward Neural Networks", Proc. of Int. Workshop on Fault Tolerant Parallel Processing, Hawaii, April 1996.
49. H. Nait-Charif, T. Ohmameuda, K. Kaneko, and H. Ito, "Fault Tolerant Learning Technique for Neural Networks", Proc. of IEICE Fall, September 1997.
50. H. Nait-Charif, A. Nasir and H. Ito, "Improving Fault Tolerance and Generalization Ability by Noise Injection into Hidden Neurons", Proc. of IEICE Spring, part. 1, pp. 238 Japan, March 1997. (In Japanese).
51. A. Nasir, H. Nait-Charif and H. Ito, "Output Smoothing: A Learning Algorithm for Fault Tolerant Neural Networks", Proc. of IEICE Spring, part. 1, pp. 239, Japan, March 1997.
52. H. Nait-Charif, T. Ohmameuda, K. Kaneko, and H. Ito, "Dynamic Construction of Fault Tolerant Feedforward Neural Networks", IEICE Technical Report, FTS97-34, pp. 31-38, August 1997.
53. H. Nait-Charif and H. Ito, "A New Energy Function for Fault Tolerant Neural Networks", Proc. of IEICE Spring, part. 1,p. 203, Japan, March 1996.
54. H. Nait-Charif and H. Ito, "A Learning Algorithm for Fault Tolerant Feedforward Neural Networks", IEICE Technical Report, FTS95-78, pp. 23-30, February 1996.

55. H. Nait Charif, T. Ohmameuda, and H. Ito, "Training Method for Fault Tolerant Feedforward Neural Networks", Proc. of IEICE Fall, part. 1, Japan, September 1995.