# Curriculum Vitae

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|---|---|
| Name: | Abbas Cheddad (Phd United Kingdom, Senior Member IEEE) |
| Position: | Associate Professor (Permanent position), Group leader and Co-Founder at *ActionSense* Ltd. (UK) |
| Work Address: | Department of Computer Science (DIDA) Blekinge Institute of Technology. SE-371 79. Karlskrona, Sweden. |
| Work Profile: | https://www.bth.se/staff/abbas-cheddad-abc/ |
| Tel [Office]: | +46 4 55-385863 (Office: J3112) |
| Email: | abbas.cheddad[ AT]bth.se |
| Personal Web corner: | http://www.abbascheddad.net |

## Research Interests

Computer vision, 3D reconstruction and Optical projection tomography, Steganography, image analysis, Quantitative imaging bio-markers, Pattern localisation and recognition, Evaluation of the association between image-based phenotypes and genomic biomarkers, Multi-model image fusion, Algorithms for the computer-guided analysis of multi-dimensional data sets, Computer vision for design process, and machine learning applications.

## Education

**Level     :     PhD (Awarded with distinction)**

| | |
|---|---|
| Grade    : | N/A (Research Based) |
| Field of Study: | Computer Science |
| Major    : | Computing and Intelligent Systems |
| Location: | United Kingdom |
| Means of Sponsorship: | Full research scholarship from the attended University (Vice Chancellor's Research Studentship) |
| Starting Date: | 01/11/2006 |
| Graduation Date: | 27/11/2009 |
| Name of Institution: | University of Ulster, Londonderry, United Kingdom. |
| Title of thesis: | "Strengthening Steganography in Digital Images" |
| External examiner: | Professor Fionn Murtagh, Royal Holloway, the University of London. |

**Level     :     Master of Science (MSc)**

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|---|---|
| Grade    : | N/A (Research Based) |
| Field of Study: | Computer Science |
| Major    : | Computer Graphics (Pattern Recognition Group) |
| Location: | Malaysia |
| Means of Sponsorship: | Full research scholarship from the attended University. |
| Starting Date: | 01/July/2003 |
| Graduation Date: | 16/April/2005 |
| Name of Institution: | UTM, Johor, Malaysia. |

**Level     :     Bachelor Degree (BSc)**

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|---|---|
| Grade    : | CGPA:  3.279/4.000 |
| Field of Study: | Information system |
| Major    : | Computer Networking |

Location:                Malaysia
Means of Sponsorship:    Full scholarship from the attended University.
Graduation Date:         03/2003
Name of Institution:     IIUM, Kuala Lumpur, Malaysia.


## Employment

### 2017 (01- September) -Present:

Associate Professor (Permanent Position)
Department of Computer Science and Engineering, Blekinge Institute of Technology, SE-371 79 Karlskrona, Sweden.
Alongside my teaching duties, I am participating in a large research project, "*Scalable resource-efficient systems for big data analytics*," where close research collaboration with industry is key for the project execution. I invest my expertise in image processing into this project that focuses on Big Data https://a.bth.se/bigdata/. More specifically, I am leading research theme B: Big data analytics for image processing. The research profile, Scalable resource-efficient systems for big data analytics, combines existing expertise in machine learning, data mining, and computer engineering to create new knowledge in the area of scalable resource-efficient systems for big data analytics. The value of the new knowledge is demonstrated and evaluated in two application areas (decision support systems and image processing). Currently, the group is collaborating, research-wise, with two companies, namely SONY Mobile (Lund) and ArkivDigital (Stockholm), by addressing practical industrial problems.
I am also collaborating with GKN Aerospace Sweden AB (the world's leading multi-technology tier 1 aerospace supplier).

### 2015 (October) - 2017 (August):

Senior Lecturer (Permanent Position)
Department of Computer Science and Engineering, Blekinge Institute of Technology, SE-371 79 Karlskrona, Sweden.

### 2012 – 2015 (September):

I joined Karolinska Institutet (Department of Medical Epidemiology and Biostatistics) in Stockholm as a Postdoc working on risk assessment of breast cancer via statistical image processing. More explicitly, I was working on extracting additional biomarkers, apart from mammographic density, from mammographic images which can boost risk prediction of breast cancer. I was also involved in the automation of the semi-automatic software Cumulus on the digitised analog **screen films** for area-based density measurement and also on the automation of volumetric mammography density on **processed** full field digital mammography (FFDM).

### 2010 - 2012:

Post-doc Researcher: I worked at Umeå Centre for Molecular Medicine (UCMM), Umeå University, Sweden. I was responsible for developing imaging algorithms to enhance the reconstruction quality of OPT (Optical Projection Tomography) data. This work culminated in the provision of a software package called DSPOPT which is now provided free of charge to the research community for non-commercial use. Several research centres in Australia (Monash University), Finland (Oulu University), UK (MRC University Unit For Human Genetics, University of Edinburgh- and Imperial College London), Denmark (Novo Nordisk Company), Czech Republic (the Academy of Sciences)  and Sweden (Umeå University and Lund University)  are now using this software, integrating it into commercial OPT scanners in their respective laboratories. *The above OPT algorithms generally contribute to increase acquisition speed and quality of pancreatic OPT data. The contributions will be exploited in the context of the OPTiSPIM instrument, developed by the Center for Genetic Regulation, Barcelona (CGR) and their spin-off company (BIOPTONICS). See: VIBRANT: PROJECT FINAL REPORT (pp 58-59 and TEMPLATE B1 (p.53)):*

**03-Apr- 2006 until 21- Oct-2006:**
> University Lecturer at the school of computer & communication engineering, Universiti Malaysia Perlis, Malaysia (see more details in the pedagogic qualifications section).

**10-2005 until 12-2005:**
> I was hired as a web developer by *Techmy Sdn Bhd*, a private multinational company based in Kuala Lumpur (Malaysia).

## Pedagogic qualifications

- Teaching and Learning in Higher Education spring 2013: I successfully finished the teacher's course entitled "*Teaching and Learning in Higher Education*" at Karolinska Institutet. The course was equivalent to 5 weeks university studies.
  A copy of the certificate: http://www.abbascheddad.net/TeachingCertificate.pdf

- Training on the CDIO (Conceiving, Designing, Implementing, Operating) Standards: Integrated Leaning Experiences Active & Experiential Learning. Blekinge Tekniska Högskola, 8 December 2016.

- 9 November and 8 December 2016: Conceiving-Designing-Implementing-Operating (CDIO - http://www.cdio.org/-) Framework Workshop. Seminars for teachers (Utbildningsseminarium CDIO).

- September 2012: I gave a crash course to master's degree students at Karolinska Institutet (Department of Learning, Informatics, Management and Ethics) on the topic of medical image processing.

- December 2012: An introductory course to data security in relation to health informatics was given to master's degree students at Karolinska Institutet (Department of Learning, Informatics, Management and Ethics).

## Supervision qualification

I successfully completed the supervision training course at Blekinge Institute of Technology, Sweden, in Aug 2016. The course is mandatory to get the corresponding right to become an examiner of doctoral students and consequently to be eligible to apply for the Docent position.

## Teaching/Supervision at BTH

At Blekinge Institute of Technology (BTH) I am involved in teaching the following courses:

- Datastrukturer o alg –Data Structure and Algorithms- (BSc, B.Eng) DV1549
- Inledande programmering i Java - Initial Programming in Java- DV1453/DV1487/ DV1498/ DV1559
- Applied Java Programming (Tillämpad programmering i java) DV1558
- Databasteknik (Database Technology) DV1587

### *Postgraduate Courses*
- Maskininlärning - Machine Learning - (MSc) DV2542
- Masterarbete i datavetenskap – Supervision of MSc thesis in computer science- DV2566
- Examensarbete för civilingenjörer- Degree Project in Master of Science in Engineering- TE2502
- DV2592- Digital Image Processing: A postgraduate course, will be offered in 2020.

**PhD students**

1. Dr. Pratheepan Yogarajah (School of Computing & Intelligent Sys, University of Ulster, UK) defended his PhD thesis in 2015. Currently a Lecturer at the same University.
2. Dr. Christoffer Nord (Umeå Center for Molecular Medicine –UCMM-, Umeå Universitet, Sweden), defended his PhD thesis on the 26th May 2016. Currently a Postdoc at UCMM.
3. Dr. Fredrik Strand (Department of Medical Epidemiology and Biostatistics –MEB-, Karolinska Institutet, Sweden), defended 8 June 2018.
4. **Ongoing:** Ms. Siva Krishna Dasari (Department of Computer Science and Engineering, Blekinge Institute of Technology, Sweden) -main supervisor-, in collaboration with GKN Aerospace Sweden AB.
5. **Ongoing:** Ms. Benhamza Hiba (Department of Computer Science, LESIA Laboratory, Algeria) -co-supervisor-.

**MSc Theses**

*Supervisor*
1. Vishnu Manasa Devagiri –defended- (Oct 2015/ Jan 23 2017): *"Splicing Forgery Detection and the Impact of Image Resolution."* Now she is a PhD student at our department.
2. Patrik Eliasson -defended- (Oct 2016/ Jan 23 2017): "*Historical Handwritten Digits Classification using PHOG Features and Random Forest."*
3. Vaishnavi Annavarjula -defended- (Oct 2016/ April 27 2017): "*Computer-Vision Based Retinal Image Analysis for Diagnosis and Treatment."*
4. Oskar Carlsson and Daniel Nabhani -defended- (Jan 2017 / June 2017): "User and Entity Behavior Anomaly Detection using network traffic."
5. Edward Fenn and Fornling Erik -defended- (Jan 2017 / June 2017): "Mapping and identifying device types on a network by use of metadata."
6. Faisal Shahzad -defended- September 2019-: "Algorithm Development for Source Camera Model Identification", now at IBM, USA.
7. Hassam Bin Masood -**Ongoing**-: medical ultrasound imaging
8. Satya Vardhini -**Ongoing**-: "…"
9. Xusheng Liang -defended- February 2019: "Historical Document Layout Digital Analysis"
10. Xiaoran Chen -defended- May 2019-: "Image enhancement effect on the performance of convolutional neural networks", now at Huawei (AI field), China.
11. Ramyasree Kola -defended- May 2019-: "Generation of synthetic plant images using deep learning architecture"
12. Wu Qian -defended- May 2019-: "Segmentation-based Retinal Image Analysis"
13. Geetha mandagondi **-Ongoing-** with Ericsson, Sweden
14. Mengqiao Zhao **-Ongoing-** OCR
15. Dilukshi Dissanayake and Fabia Afzal **-Ongoing-** Medical Imaging
16. Daniel Shevchuk **-Ongoing-** Video mining
17. Erik Westerberg **-Ongoing-** Medical Imaging
18. Om sai teja Chennupati chennupati omsaiteja **-Ongoing-**
19. Sruthi Annapureddy and Immella Srinivas Sai Charan **-Ongoing-** Underwater Imaging
20. Narasimha Krishna **-Ongoing-** Mirrored Angle Label Image Capture Extraction
21. Fredrik Junede and Samuel Asp **-Ongoing-** Machine Learning and Graphics
22. Sarath Chandra Damineni and Munukoti Sai Manikanta **-Ongoing-** with Husqvarna Group, Sweden.
23. Ousainou Darboe, to start in June 2020.

*Examiner*
1. Oskar Henriksson and Michael Falk, -defended- (Jan 2017 / June 2017): "*Static Vulnerability Analysis of Docker Images*."
2. Andreas Holmqvist and Fredrik Lycke, -defended- (Jan 2017 / June 2017): "*Vulnerability Analysis of Vagrant Boxes*."
3. John Bergsten and Konrad Öhman, -defended- (Jan 2017 / June 2017): "*Player Analysis in Computer Games Using Artificial Neural Networks*."

4. Lucas Holmqvist and Eric Ahlström, -defended- (Jan 2017 / June 2017): "*Comparing Traditional Key Frame Animation Approach and Hybdrid Animation Approach of Humanoid Characters.*"
5. Zeid Baker, Mousa (Nov 2017 / Feb 2018): "*Generation of Artificial Images using a Generative Neural Network*". In collaboration with SONY mobile Sweden.
6. Johan Almeflo –Ongoing- (Nov 2017 / -): "*A comparison of precision between Google ARCore and Apple ARKit*".

### *Reviewer*

1. Jakob Trusz, -defended- (Jan 2017 / June 2017): "*Content Management Systems and MD5: Investigating Alternative Methods of Version Identification for Open Source Projects.*"
2. Ivar Björling and Albin Bernhardsson, (Jan 2018 / 31 May 2018): "*Procedural collision geometry generation using photos and color labels*".
3. Andreas Persson - (Jan 2018 / 29 May 2018)-: "*High-quality real-time TIN creation*".
4. Mark Daniel Alexander Pejcinovski - **Ongoing** -: "*Mixed reality projection*".
5. Andreas Jonasson and Joakim Nilsson - (Jan 2018 / 31 May 2018) -: "*Using Machine Learning for Iterative Gameplay Testing*"
6. Viktor Lundkvist - **Ongoing** -: "*Real Time Cumulonimbus Clouds Simulation*".
7. Liu Yuan, defended, (September 2019), "Machine Learning Approach to Forecasting Empty Container Volumes"
8. Pradeep Siddhartha Singh Bisen, (September 2019), "Predicting Operator's Choice During Airline Disruption Using Machine Learning Methods"
9. Venishetty Sai Vineeth, (September 2019), "Machine Learning Approach for Forecasting the Sales of Truck Components"

## Grant Award

- *Co-investigator:* Ref. PoP 08/186 (University of Ulster- Innovation centre). Start: 17th December 2008- End: 31st July 2009. Title: Identity Cards Employing Steganography. Award: **£7,430**. PI: Dr. Joan Condell.

- *Co-investigator:* Proof of Concept Programme (Invest NI & European Regional Development Fund): Start: October 2009- End: October 2010. Title: Secure Digital Watermarks (SDW): Secure Data Hiding in Image Frames using Steganography. Award: **£77074.20**. PI: Dr. Joan Condell.

- *Co-applicant* (postgraduate studies - second and third cycle courses): The Swedish Knowledge Foundation has just accepted our proposal for the development and implementation of Network-based education for international positioning (NU 18 - Nätbaserad utbildning för internationell positionering). The project will last for 3 years (starting in Sep 2019). Award: **3 Million SEK (~ 290K €)**. PI: The dean of faculty of computing, Prof. Lars Lundberg.

## Awards

- Scholarship award (Bachelor of Information Systems)
- Dean List Award for high academic performance during BSc (earned twice)
- Fellowship award from Universiti Teknologi Malaysia (Msc degree).
- Vice Chancellor's Research Studentship from University of Ulster (PhD degree).
- Best Transfer Report of the Faculty of Computing and Engineering (2007). Award given by the University of Ulster in collaboration with McGraw-Hill to 2nd year PhD students. Hilton Hotel on 03-04-2008.
- Best paper award at the 8th International Conference on Information Technology and Telecommunication (2008). The award was given by IET (The Institution of Engineering and Technology). Galway, GMIT, Ireland on 24-October-2008.
- 25K Award for New Entrepreneurs (best project in the high-tech category)
- Best PhD thesis award of the Faculty of Computing and Engineering (2009). The award was in the form of a trophy and £300.
- The Institute of Electrical and Electronics Engineers (IEEE) senior membership award, 2018-02-17.

## Entrepreneurship

**25K Award for New Entrepreneurs:** The award was for the best project in the Hi-Tech category sponsored by Northern Ireland Science Park (NISP), 24th Sept 2009. The event was covered by BBC Northern Ireland (Mrs. Wendy Austin). The project is entitled Secure Digital Watermark (SDW).

URL: http://abbascheddad.net/25K.jpg

*ActionSense* **Co. Ltd** (*formerly known as HidInImage* **Co. Ltd) - Company Number. NI612943-:** I am the *co-founder* and one of the *shareholders* of *ActionSense,* a University spin-out company based in the UK. This initiative is trying to exploit our patented technology and encryption methods which enable the encryption and embedding of secret information (text or images) inside other multimedia files using Steganography techniques. Our award-winning Steganography-based hiding solution plays a vital role in securing digital media content. *ActionSense* won the Hi-Tech category at the Belfast 25K Investment awards, 2009.

## Media Coverage

- **SDW's High Watermark puts better security on the cards**

The *Belfast Telegraph* on our project to investigate digital watermarking and how it can be used in various security applications. Link

- **Ulster Experts Explore Digital Secrets**

Uinversity of Ulster piece on work with Kevin Curran, Joan Condell, Peter Devine and Paul Mc Kevitt on investigating digital watermarking and how it can be used to hide personal or sensitive data in photo images, identity cards and other digital media. It was also mentioned as *Next Big Thing* in 4NI. Link

- **Al Jazeera Media Network "***The Expatriates***" -aired on TV 2019/09/08 at 06:30 Doha Time-**

Program meets distinguished expatriates around the world and highlights their rich experience and successes.  Link1  ||  Link2

## External International Collaboration

- **Research Collaboration (mammography and imaging physics):** Dr. John Shepherd, Department Radiology, the University of California, San Francisco, USA.
- **Research Collaboration and Entrepreneurship (Digital Watermarking)**: Dr. Joan Condell and Dr. Kevin Curran (Computing and Intelligent Systems, University of Ulster, UK).
- **Research Collaboration (Wireless Communications):** Dr. Nasreddine Lagraa, Laboratoire d'Informatique et de Mathématiques, University of Laghouat, Algeria.
- **Industrial/Research Collaboration:** Provided several clients, worldwide, with advanced customized software for their core research/businesses, using pattern recognition algorithms and machine learning techniques.
- **Research Collaboration (Ophthalmology):**  Andres Bustamante-Arias, Cornea and Ocular Surface Service, Ophthalmology and Visual Sciences Institute, School of Medicine. Instituto Tecnológico Y De Estudios Superiores De Monterrey, México.

## Professional membership

- IEEE Society, Senior Member
- IEEE Signal Processing Society
- Swedish Society for Automated Image Analysis membership
- Swedish Bioimaging membership
- SULF: The Swedish Association for University Teachers and Researchers
- A member of the International Association of Science and Technology for Development (IASTED), Technical Committee on Image Processing and on Biomedical Engineering

### *Journals*

- IEEE Transactions on Image Processing, Signal Processing Society.
- IEEE Transactions on Information Forensics and Security, IEEE Signal Processing Society.
- IEEE Transactions on Systems, Man, and Cybernetics, Part B: Cybernetics.
- IEEE Transactions on Circuits and Systems for Video Technology.
- IEEE Signal Processing Letters.
- Signal Processing, Elsevier Science.
- Signal Processing: Image Communication, Elsevier Science.
- Digital Signal Processing, Elsevier Science.
- Journal of Systems and Software, Elsevier Science.
- Information Sciences, Elsevier Science.
- Signal Image and Video Processing, Springer.
- Pattern Recognition Letters, Elsevier.
- Journal of Signal Processing Systems, Springer.
- Journal of Visual Communication and Image Representation, Elsevier Science.
- Academic Radiology, Elsevier Science.
- Information Fusion, Elsevier Science.
- Neurocomputing, Elsevier Science.
- Journal of the Institution of Engineers (India): Series B. Springer.
- PLOS ONE
- Journal of Information Security and Applications
- Journal of Real-Time Image Processing, Springer
- Multidimensional Systems and Signal Processing, Springer.
- International Journal of Image and Graphics, World Scientific.
- Wireless Sensor Network (WSN), Scientific Research Publishing Inc.
- IETE Technical Review, Medknow Publications and Media Pvt Ltd.
- The Imaging Science Journal, the Royal Photographic Society.
- IET Image Processing
- Cryptologia, Taylor & Francis.
- EURASIP Journal on Information Security
- Circuits, Systems & Signal Processing, Springer.
- Journal of Experimental & Theoretical Artificial Intelligence, Taylor & Francis.

### *Conferences (organisation and reviewing)*

*Chair*

- Track Chair (Computer Graphics, Vision and Multimedia): International Conference on Advanced Computer Science Applications and Technologies – ACSAT2012.
- Executive Chair: The second Mediterranean Conference on Pattern Recognition and Artificial Intelligence, MedPRAI 2018.
- Session Chair: 2018 Annual BigData@BTH Workshop (https://a.bth.se/bigdata/ws2018/), Blekinge Institute of Technology, Karlskrona, October 11-12, 2018
- Program Chair and PC member: International Conference on Pattern Analysis and Recognition (ICPAR 2019).
- Session Chair 2019 Annual BigData@BTH Workshop, Blekinge Institute of Technology, Karlskrona, Sweden. 2019/10/11-12.
- Session Chair (2): 2019 The 9th International Conference on Image Processing Theory, Tools and Applications IPTA'19.
- Conference organizing Committee (Publication & Program Chair): the international conference on Intelligent Systems and Pattern recognition (ISPR'2020), Hammamet, Tunisia, on 25-27 March 2020.

*PC member or Reviewer*

- Reviewer: International Conference on Digital Information and Communication Technology and its Applications (DICTAP2011), Springer.
- Reviewer: International Conference on Software Engineering and Computer Systems, Springer.
- Reviewer: International Conference on Digital Information Processing and Communications, Springer.
- PC member: ACSAT 2012 (International Conference on Advanced Computer Science Applications and Technologies)

- PC member: ICCCT-2012 (3rd International Conference on Computer and Communication Technology)
- PC member: ICCCT-2014 (5th International Conference on Computer and Communication Technology)
- PC member: SICSA2010 (SICSA PhD Conference)
- Reviewer: WICT 2012(2nd World Congress on Information and Communication Technologies)
- Reviewer: International Conference on Intelligent Systems and Signal Processing, ISSP 2013.
- Reviewer: International Conference on Signal, Image, Vision and their Applications (SIVA'13).
- Reviewer: Scientific Committee: 3$^{rd}$ International Conference on Signal, Image, Vision and their Applications (SIVA'15), www.pimis.net/siva1.
- PC member: MEDPRAI 2016- the 1st Mediterranean Conference on Pattern Recognition and Artificial Intelligence. IAPR/ACM.
- PC member: ICCCCS-2016- International Conference on Computer, Communication and Computational Sciences.
- PC member: International Conference on Man-Machine Interactions (ICMMI 2017). October 3-6, 2017 Cracow, Poland. Springer.
- PC member: MEDPRAI 2018- the 2$^{nd}$ Mediterranean Conference on Pattern Recognition and Artificial Intelligence. IAPR/ACM.
- PC member: ICMMI 2019 International Conference on Man-Machine Interactions. October 2-4, 2019 Cracow, Poland. Springer.
- PC member: SETIT 2019 International Conference on the Sciences of Electronics, Technologies of Information and Telecommunications, Tunisia, October 21-23, 2019, Springer.
- Reviewer (6 papers): IEEE International Symposium on Biomedical Imaging (ISBI 2020), Iowa City, USA. IEEE Signal Processing Society.

## Invited Grading Committee Member

Invited committee member for PhD defence scheduled on the 5$^{th}$ of March 2020. PRISME Laboratory, INSA CVL - University of Orléans, France.

## Invited Talks

**Invited Lecture (6 January 2014):** Delivered a talk entitled: "Digital Image Steganography" at the "Laboratoire d'Informatique et de Mathématiques, University of Laghouat, Algeria."

**Invited Keynote Speech** (**23-23 November 2016):** Invited as a keynote speaker at the Mediterranean Conference on Pattern Recognition and Artificial Intelligence. Speech title: "Recent Trends in Image Processing from Medical Diagnosis to Document Analysis: Applications and Challenges." Click here.

**Invited Lecture (17 February 2017):** Delivered a lecture to PhD students entitled: "Digital Image Processing" at Umeå University, Sweden. The lecture was a part of the course Bioimaging 1.5 ECTS; 13 - 17 February 2017.

**Guest Lecture (26 May 2017):** Delivered a lecture to MSc students entitled: "2D Data Science" at the department of Creative Technologies, Blekinge Institute of Technology, Sweden. The lecture was a part of the course DV2545 (Advanced Topic in Computing).

**Guest Lecture (23 Nov 2017 & 12 Nov 2018):** Delivered a lecture to MSc students entitled: "Image Processing and Analysis in Data Science" at the department of Creative Technologies, Blekinge Institute of Technology, Sweden. The lecture was a part of the course DV2545 (Advanced Topic in Computing).

**Invited Keynote Speech** (**11-12 December 2018):** Invited as a keynote speaker at the "*Journées d'étude sur L'Intelligence Artificielle et ses Applications*" a l'université d'Oum El Bouaghi, Algeria. Speech title: "Image Processing in Data Science: Current prospects and future challenges." Click here.

- A member the board of management of the BigData@BTH project
- Group leader focusing on big data analytics for image processing

## Workshops

| 2010-11-12 | Umeå University: Mini-symposium, Imaging the Pancreas |
| | - Nuclear approaches to pancreas imaging |
| | - Optical approaches to pancreas imaging |
| 2011-09-(26-29) | Umeå University: IceLab Camp. An interdisciplinary workshop emphasising team work and grant proposal training. |
| 2017-09-(06-07) | Blekinge Institute of Technology: 3<sup>rd</sup> annual workshop BigData@BTH |

## Summer Schools

2007- 09- (20-21): Vision Video and Graphics (VVG) EPSRC Summer School. I won one of the student bursaries to attend the event. Click here.

2012-07- (4-13): Summer School on Medical Image Processing 2012 (SSIP'12). Vienna, Austria from. Click here.

2018-07-(5-13): VISion Understanding and Machine intelligence – VISUM 2018 –. Porto, Portugal. Click here.

## Certificates

I gained two certificates from *Active Media Innovation SDN. BHD* (A private company based in Kuala Lumpur) upon the completion of a course taken with the following details:
1- 16 March 2004 MATLAB with Image Processing
2- 18 March 2004 MATLAB with GUI

## Publications

**Research Gate:** RG Score 47.02 (as of 2020-02-25)
**ORCID (Open Researcher and Contributor ID):** 0000-0002-4390-411X

**Google Citation indices** (*)

| | All | Since 2015 |
|---|---|---|
| **Citations** | 2729 | 1624 |
| **h-index** | 17 | 14 |
| **i10-index** | 22 | 20 |

(*) Available from Google Scholar citation, accessed on 2020-02-25.

**Open Access Dataset (1)**

The ARDIS Datasets of Handwritten Digits available freely from here.

**Books (1)**

Abbas Cheddad. "Digital Image Steganography: Concepts, Algorithms and Applications ". Publisher: VDM Verlag Dr. Müller (December 4, 2009), ISBN-13: 978-3639214567.

**Invited Book Chapters (1)**

- A. Cheddad, "Digital Forgery". In Albanese, Jay S., Editor-in-chief, *Encyclopedia of Criminology and Criminal Justice*, 2014. New Jersey: John Wiley & Sons, Inc. DOI: 10.1002/9781118517383.wbeccj132

**Patent Granted (2)**

- Application Number 13125799 (granted on 11 December 2014), "An Encryption Method" University of Ulster, United Kingdom. Click here.

- Application Number 20110299771 (granted on 12 Nov 2013), "Method for Skin Tone Detection" University of Ulster, United Kingdom. Click here.

**Peer-reviewed papers in scientific journals (24)**

**1.** S. K. Dasari, **A. Cheddad**, P. Andersson, "Predictive Modelling to Support Sensitivity Analysis for Robust Design in Aerospace Engineering." Accepted for publication in *Structural and Multidisciplinary Optimization*, 2019, Springer. DOI: 10.1007/s00158-019-02467-5.

**2.** Huseyin Kusetogullari, Amir Yavariabdi, **Abbas Cheddad**, Håkan Grahn and Johan Hall, "ARDIS: A Swedish Historical Handwritten Digit Dataset," *Neural Computing and Applications*, #(#), 2019. Springer. DOI: 10.1007/s00521-019-04163-3. Click here.

**3.** Rafik Bouhennache, Toufik Bouden, Abdmalik Taleb-Ahmed & **Abbas Cheddad**, (2018). "A new spectral index for the extraction of built-up land features from Landsat 8 satellite imagery." *Geocarto International*, 34 (14) 1531-1551. Taylor & Francis. Click here.

**4.** Ola Spjuth, Andreas Karlsson, Mark Clements, Keith Humphreys, Emma Ivansson, Jim Dowling, Martin Eklund, Alexandra Jauhiainen, Kamila Czene, Henrik Grönberg, Pär Sparén, Fredrik Wiklund, **Abbas Cheddad**, þorgerður Pálsdóttir, Mattias Rantalainen, Linda Abrahamsson, Erwin Laure, Jan-Eric Litton, and Juni Palmgren. "E-Science technologies in a workflow for personalized medicine using cancer screening as a case study." *Journal of the American Medical Informatics Association*, 24(5): 950-957, 2017. doi: 10.1093/jamia/ocx038. Oxford University Press. PMID: 28444384. Impact Factor: 3.428.

**5.** **Cheddad A.** "Structure Preserving Binary Image Morphing using Delaunay Triangulation." *Pattern Recognition Letters*, (2017) 85, pp. 8-14. Elsevier. An official publication of the International Association for Pattern Recognition.

**6.** Fredrik Strand, Keith Humphreys, **Abbas Cheddad,** et, al. (2016) "Novel mammographic image features differentiate between interval and screen-detected breast cancer: a case-case study." *Breast Cancer Research* (2016) 18:100. DOI 10.1186/s13058-016-0761-x. Springer.

**7.** Brik B, Lagraa N, Lakas A and **Cheddad A**. DDGP: Distributed Data Gathering Protocol for vehicular networks. *Vehicular Communications*, 4(2016) 15-29. Elsevier.

**8.** **Cheddad A**, Czene K, Hall P and Humphreys K. Pectoral muscle attenuation as a marker for breast cancer risk in Full Field Digital Mammography. *Cancer Epidemiology, Biomarkers & Prevention (CEBP),* 24(6)(2015) 985–991. American Association for Cancer Research. PMID: 25870223.

**9.** Brik B, Lagraa N, Lakas A, Cherroun H and **Cheddad A**. ECDGP: extended cluster-based data gathering protocol for vehicular networks. *Wireless Communications and Mobile Computing*, 16 (10)(July 2016), pp: 1238–1255. John Wiley & Sons, Ltd. DOI: 10.1002/wcm.2591.

**10.** Holm J, Humphreys K, Li J, Ploner A, **Cheddad A,** Eriksson M, Törnberg S, Hall P, Czene K. (2015) Risk factors and tumor characteristics of interval cancers by mammographic density. *Journal of Clinical Oncology*, 33(9)(2015)1030-1037. PMID: 25646195.

11. **Abbas Cheddad,** Kamila Czene, Mikael Eriksson, Jingmei Li, Douglas Easton, Per Hall and Keith Humphreys. "Area and volumetric density estimation in processed full-field digital mammograms for risk assessment of breast cancer." *PLoS One*, 9 (10)(2014) 1-10. Click here.

12. **Abbas Cheddad**, Kamila Czene, John Shepherd, Jingmei Li, Per Hall, Keith Humphreys. "Enhancement of mammographic density measures in breast cancer risk prediction." *Cancer Epidemiology, Biomarkers & Prevention (CEBP)*, 23(7)(2014) 1314-1323. American Association for Cancer Research. PMID: 24722754. Click here.

> *Reviewer's comment: "This manuscript presents an interesting and novel approach to enhance mammographic density assessment from 2-dimensional images. It has been long been considered a weakness that the common assessment methods using film mammograms ignore the third dimension of breast thickness. Therefore, this paper makes a new contribution to the field of mammographic density research..."*

13. Anna Eriksson, Christoffer Svensson, Andreas Hornblad, **Abbas Cheddad**, Elena Kostromina, Maria Eriksson, Nils Norlin, Antonello Pileggi, James Sharpe, Fredrik Georgsson, Tomas Alanentalo and Ulf Ahlgren. "Near Infrared Optical Projection Tomography for Assessments of β-cell Mass Distribution in Diabetes Research." *J. Vis. Exp* 2013. (71), e50238. PMID: 23353681.

14. **Abbas Cheddad**, Christoffer Nord, Andreas Hörnblad, Renata Prunskaite-Hyyryläinen, Maria Eriksson, Fredrik Georgsson, Seppo J. Vainio, and Ulf Ahlgren. "Improving signal detection in emission optical projection tomography via single source multi-exposure image fusion." *Optics Express* 2013. 21(14)16584-16604. PMID: 23938510.

15. **Abbas Cheddad**, Christoffer Svensson, James Sharpe, Fredrik Georgsson and Ulf Ahlgren. "Image Processing Assisted Algorithms for Optical Projection Tomography." *IEEE Transactions on Medical Imaging*, January 2012, 31(1)1-15. PMID: 21768046. Click here. *It was featured "In the news", TrAC Trends in Analytical Chemistry, Volume 30, Issue 10, Pages v-xi (November 2011) Edited by Janusz Pawliszyn.*

16. Andreas Hörnblad, **Abbas Cheddad** and Ulf Ahlgren, "An improved protocol for Optical Projection Tomography imaging Reveals Lobular Heterogeneities in Pancreatic Islet and β-Cell Mass Distribution." *Islets*, 3(4)(2011) 1-5. PMID: 21633198.

17. Pratheepan, Y., Condell, J.V., Curran, K., **Cheddad, A.,** Mc Kevitt, P. "A Dynamic Threshold Approach for Skin Tone Detection in Color Images." *Int. J. Biometrics*, 4(1)(2012)38-55. Inderscience.

18. Pratheepan, Y., Condell, J.V., Curran, K., **Cheddad, A.**, Mc Kevitt, P., "An Improved Self-Embedding Algorithm: Robust Protection against Lossy Compression Attacks in Digital Image Watermarking." *Image Processing and Communications*, 15(1)(2010) 47-59.

19. **A. Cheddad**, J. Condell, K. Curran and P. Mc Kevitt, "A Hash-based Image Encryption Algorithm." *Optics Communications*, 283(6)(2010) 879-893. Elsevier Science.

20. **A. Cheddad**, J. Condell, K. Curran and P. Mc Kevitt, "Digital Image Steganography: Survey and Analyses of Current Methods." *Signal Processing* 90 (3) (2010) 727-752, Elsevier Science. *The most cited article published since 2009 in Signal Processing, Elsevier.*

21. **A. Cheddad**, J. Condell, K. Curran and P. Mc Kevitt, "Information hiding-enabled data transmission framework." *International Journal of Information Studies*, 1(3)(2009)159-164.

22. **A. Cheddad**, J. Condell, K. Curran and P. Mc Kevitt, "A Skin Tone Detection Algorithm for an Adaptive Approach to Steganography." *Signal Processing* 89 (12) (2009) 2465-2478, Elsevier Science. *Please contact me for a link to download the ground truth of Suzie.avi sequence.*

23. **A. Cheddad**, J. Condell, K. Curran and P. Mc Kevitt. "A Secure and Improved Self-Embedding Algorithm to Combat Digital Document Forgery." *Signal Processing* 89 (12) (2009) 2324-2332, Elsevier Science. Special Issue: Visual Information Analysis for Security.

24. **A. Cheddad**, D. Mohamad and A. Abd Manaf. "Exploiting Voronoi Diagram Properties in Face Segmentation and Features Extraction." *Pattern Recognition* 41 (12)(2008) 3842-3859, Elsevier Science.


**Refereed Conference Publications (32)**

1. A.A. Bustamante, A. Cheddad and A. Rodriguez-Garcia, "Digital Image Processing and Development of Machine Learning Models for the Discrimination of Corneal Pathology: An Experimental Model". Accepted for oral presentation at the American Academy of Ophthalmology's annual meeting (AAO 2019), San Francisco Oct 12-15. Acceptance rate (6%). https://www.aao.org/annual-meeting

2. Wu Qian and Abbas Cheddad. "Segmentation-based Deep Learning Fundus Image Analysis," Accepted for oral presentation at the 9th International Conference on Image Processing Theory, Tools and Applications IPTA 2019. Nov 6-9, 2019, Istanbul, Turkey.

3. Dasari S.K., Cheddad A., Andersson P. (2019) Random Forest Surrogate Models to Support Design Space Exploration in Aerospace Use-Case. In: MacIntyre J., Maglogiannis I., Iliadis L., Pimenidis E. (eds) Artificial Intelligence Applications and Innovations. AIAI 2019. IFIP Advances in Information and Communication Technology, vol 559, pp 532-544. Springer.

4. Abbas Cheddad, Huseyin Kusetogullari and Håkan Grahn, (2017). "Object Recognition using Shape Growth Pattern," 10th *International Symposium on Image and Signal Processing and Analysis* (ISPA 2017). 18-20th September 2017, pp.47-52, Ljubljana, Slovenia.

5. V. M Devagiri and A. Cheddad. "Splicing Forgery Detection and the Impact of Image Resolution," 5th International Workshop on Systems Safety and Security (IWSSS 2017). Targoviste, România, 29-30 June 2017.

6. Cheddad, A. "Towards Query by Text Example for Pattern Spotting in Historical Documents." 7th International Conference on Computer Science and Information Technology (CSIT'16), July 13-14, 2016, IEEE Computer Society.

7. Akser, M., Bridges, B., Campo, G., Cheddad, A. et al. (2017). "SceneMaker: Creative Technology for Digital StoryTelling". In: Brooks A., Brooks E. (eds) Interactivity, Game Creation, Design, Learning, and Innovation. ArtsIT 2016, DLI 2016. Lecture Notes of the Institute for Computer Sciences, Social Informatics and Telecommunications Engineering, vol 196. Springer, Cham. DOI: 10.1007/978-3-319-55834-9_4.

8. Pratheepan Yogarajah, Joan Condell, Kevin Curran, Paul Mc Kevitt and Abbas Cheddad. (2010) "Video Authentication: A Self Embedding Steganography approach". International Machine Vision and Image Processing Conference, IMVIP'10, 8-10 September 2010, Ireland.

9. Yogarajah Pratheepan J. Condell, K. Curran, P. Mc Kevitt and Abbas Cheddad. "An Improved Self-Embedding Algorithm: Digital Content Protection against Compression Attacks in Digital Watermarking". 2nd International Conference on Image Processing and Communications, Poland. 20-23 October 2010. Also appears as a monograph by Springer-Verlag in Advances in Soft Computing Series book, Volume 84, Image Processing and Communications Challenges 2, Pages 59-66.

10. Pratheepan Yogarajah, Joan Condell, Kevin Curran, Abbas Cheddad and Paul Mc Kevitt, "A dynamic threshold approach for skin segmentation in color images", IEEE International Conference on Image Processing , ICIP 2010, Hong Kong, 26-29 Sept. 2010, pp: 2225-2228.

11. A. Cheddad, J. Condell, K. Curran and P. Mc Kevitt. "Towards Objectifying Information Hiding". IEEE 35th International Conference on Acoustics, Speech, and Signal Processing (ICASSP). 14-19 March 2010, pp. 1770-1773. Dallas, USA.

12. A. Cheddad, Condell, J.V., Curran, K.J., McKevitt, P.,"A New Colour Space for Skin Tone Detection". IEEE International Conference on Image Processing, ICIP 2009. 7-10 Nov. 2009, pp. 497 - 500. IEEE Signal Processing Society. Egypt.

13. A. Cheddad, J. Condell, K. Curran and P. Mc Kevitt, "Data Hiding Tools for Digital Forensic Experts," In: Proceedings of Digital Forensics, Security and Law, May 20-22, 2009, Burlington, Vermont, USA, ISSN: 1931-7379, ADFSL (Association of Digital Forensics, Security and Law), pp: 111-113.

14. A. Cheddad, J. Condell, K. Curran and P. Mc Kevitt, "A New Digital Image Security Strategy: Steganoflage". 15th International Symposium on Electronic Art (ISEA 2009), 23rd August - 1st September 2009, Belfast, Northern Ireland, 2009.

15. A. Cheddad, J. Condell, K. Curran and P. Mc Kevitt. "Steganoflage- A Novel Approach to Image Steganography". The 8th International Conference on Information Technology and Telecommunication IT&T 2008, Doctoral Symposium, Galway Mayo Institute of Technology, Galway, Ireland 23rd-24th October 2008, pp:191-194.

16. A. Cheddad, J. Condell, K. Curran and P. Mc Kevitt. "On Points Geometry for Fast Digital Image Segmentation". The 8th International Conference on Information Technology and Telecommunication

IT&T 2008, Galway Mayo Institute of Technology, Galway, Ireland 23rd-24th October 2008, pp: 54-61. *Best paper award. Awarded by IET (The Institution of Engineering and Technology). Certificate and a prize of € 300.*

**17.** A. Cheddad, J. Condell, K. Curran and P. Mc Kevitt. "Combating Digital Document Forgery using New Secure Information Hiding Algorithm". In: Proceedings of the 3rd International Conference on Digital Information Management, University of East London, UK, 2008.

**18.** A. Cheddad, J. Condell, K. Curran and P. Mc Kevitt. "Securing Information Content using New Encryption Method and Steganography". In: Proceedings of the 3rd International Conference on Digital Information Management, University of East London, UK, 2008.

**19.** Curran, K. Condell, J., Cheddad, A., Mc Creadie, K. and Maguire, L.M., Issues of Privacy & Surveillance, In Proceedings of the 5th International Conference on Technology, Knowledge and Society. 30-Jan to 1-Feb 2009. Huntsville, Alabama, USA.

**20.** A. Cheddad, J. Condell, K. Curran & P. Mc Kevitt. (2008). "Skin Tone Based Steganography in Video Files Exploiting the YCbCr Colour Space". Proc of the 2008 IEEE International Conference on Multimedia and Expo, Hannover, Germany. pp.905-909. June 23-26, 2008.

**21.** A. Cheddad, J. Condell, K. Curran & P. Mc Kevitt. (2008). "Enhancing Steganography in Digital Images". In the proceedings of the Fifth Canadian Conference on Computer and Robot Vision. Windsor, Ontario, 28-30 May 2008, pp. 326-332.

**22.** A. Cheddad, J. Condell, K. Curran & P. Mc Kevitt. (2008). "Biometric Inspired Digital Image Steganography". In the proceedings of the 15th Annual International Conference and Workshops on the Engineering of Computer-Based Systems (ECBS'08). pp. 159-168. I won a travel grant from LERO; the Irish Software Engineering Research Centre.

**23.** A. Cheddad, J. Condell, K. Curran & P. Mc Kevitt. (2007). "An Adaptive Approach to Steganography in Steganography". IEEE SMC UK&RI 6th Conference on Cybernetic Systems 2007 September 6-7, University College Dublin, Republic of Ireland. pp 11-16.

**24.** A. Cheddad, Joan Condell, Kevin Curran, Paul Mc Kevitt. (2007). "A Comparative Analysis of Steganographic Tools". Proceedings of the Seventh IT&T Conference. Institute of Technology Blanchardstown, Dublin, Ireland. 25th- 26th October 2007. pp 29-37.

**25.** A. Cheddad, R.A. Badlishah, "NESROBOT: A 3 in 1 Vision System Algorithm for Robot Navigation". International Conference on Man-Machine Systems -ICOMMS'2006, Langkawi Islands, Malaysia 15th - 16th September 2006.

**26.** A. Cheddad, H. Setan and Z. Majid, "Disparity Map Calculation Through Epipolar Lines Estimation for 3D Facial Reconstruction". International Symposium and Exhibition on Geo-information (ISG) 2005, Penang, Malaysia 27-29 September 2005, p 44-53.

**27.** A.M. Zeki, A. Farshid Ghyasi, M.S. Zakaria, Maram Mujahid, Norazlina Zainul, A. Cheddad and M. Zubayr, "Design and Implementation of a Voronoi Diagrams Generator using Java" . International Arab Conference on Information Technology, 12-15 Dec 2004, Algeria.

**28.** A. Cheddad, D. Mohamad and A.A. Manaf, "A Novel Method for Face Segmentation and Face Features Extraction based on Voronoi Diagram". International Arab Conference on Information Technology, 12-15 Dec 2004, Algeria.

**29.** A. Cheddad, N. Zainul and M. Mujahid, Developing and Testing Online Survey Instrument, Second Real-Time Technology and Applications Symposium (RENTAS 2004), Malaysia: Nov 24-25, 2004.

**30.** D. Mohamad, A. Cheddad and A.A. Manaf, "A New Algorithm for Face Location and Face Features Extraction based on Voronoi Diagram and Parametric Contour". International Conference on Information & Communication Technologies: From Theory to Applications. Damascus. Syria: April 19 - 23, 2004.

**31.** A. Cheddad, D. Mohamad and A.A. Manaf, "An Efficient Hybrid Algorithm for Face Features Extraction Based on Contour linearization and Voronoi Diagram". Panitia Seminar Nasional Informatika 2004-SNI2004 Program Studi Teknik Informatika. Universitas Ahmad Dahlan, Indonesia.

**32.** A. Cheddad and A.M. Zeki, "Template Matching and its Industrial Applications". Proceedings of the 19th International Conference on CAD/CAM, Robotics and Factories of the Future. Kuala Lumpur. Malaysia: Tuesday, 22nd July 2003.