CURRICULUM VITAE^{updated 17 Oct 2023}

i.   NAME   : HABIBOLLAH BIN HARON
Date of Birth: 27 December 1966

ii.   Academic Qualification

No.	Qualification	Year	Institution
1	Doctor of Philosophy (Computer Science)	2004	Universiti Teknologi Malaysia
2	Master of Science (Computer Technology in Manufacture)	1995	University of Sussex, United Kingdom
3	Bachelor of Science (Computer Science)	1989	Universiti Teknologi Malaysia
4	Diploma in Computer Science	1987	

iii.   Professional Membership

No.	Membership	Year	Institution
1	IEEE Senior Member	Since 2014	IEEE
2	ORCID ID	0000-0002-3749-5364	
3	Scopus ID	24450495700	

iv.   Teaching and Management

Courses taught since 1992

- Research Methodology for Data Science
- Inventory and Material Resource Planning
- Manufacturing Automation & Robotics
- Data Analysis using Statistical Packages (Excel, Matlab, SPSS)
- Discrete Structure
- Industrial Automation System
- Quantitative Method
- Introduction to Computer Computer Literacy
- Information Technology for Manufacturing
- Numerical Method
- Research Methodology for Research Student
- Advanced Theory of Computer Science
- Operational Research Techniques
- Computer Aided Design and Manufacturing (CAD/CAM)
- Data Structure & Algorithms
- Fortran Language
- Programming Techniques (C, Pascal)
- Industrial Operation Management
- Probability & Statistics
- Software Project Management
- Computer Organisation and Architecture
- Introduction to Computer Graphics
- Computational Mathematics
- Programmable Logic Controller (PLC)

b. Management Responsibilities

No.	Date	Position	Department
1	1 Dec 2020 – 30 Sept 2023	Coordinator of PhD programs	Faculty of Computing, UTM
2	18.8.2018 – 31.1.2020	President	Qaiwan International University-UTM Franchise Kurdistan-Iraq
	1.2.2015 – 31.1.2017	Deputy Dean (Academic)	Faculty of Computing, UTM
3	1.2.2017-1.8.2018	Head	Soft Computing Research Group, UTM
4	1.2.2013 – 31.1.2015	Head of Department	Department of Computer Science, Faculty of Computing, UTM
5	1.3.2011 – 31.1.2013		Department of Modeling and Industrial Computing, Faculty of Computer Science and Information Systems, UTM
6	1.10.2004 – 31.8.2009		

v. Working Experience

No.	Employer	Position	Date
Working			
1	Department of Applied Computing and Artificial Intelligence, Faculty of Computing, UTM	Professor	3.10.2012 - present
2	Abylkas Saginov Karaganda Technical University, Kazakhastan	Visiting Professor	1-28 October 2022
3	Qaiwan International University-UTM Franchise Sulaymaniyah, Kurdistan-Iraq	President	17.8.2018 – 31.1.2020
4	Department of Computer Science, College of Computer & Information Sciences, Imam Mohammed Ibn Saud Islamic University, Riyadh, Saudi Arabia	Associate Professor	21.9.2009 – 31.1.2011
5	Department of Modeling and Industrial Computing, Faculty of Computer Science & Information Systems, UTM	Associate Professor	11.8.2008 – 2.10.2012
		Senior Lecturer	27.12.2005 0 10.8.2008
		Lecturer	16.11.1995 – 26.12.2005
		Assistant Lecturer	28.12.1991 - 13.11.1995
6	Matsushita Foundry Industrial, Tanjung Keling Industrial Estate, Melaka, Malaysia	QC Supervisor	1.10.1991 – 15.11.1991
7	Computer System Advisers (M) Sdn Bhd, Petaling Jaya, Malaysia	Analyst Programmer	18.9.1989 – 30.9.1991

External Appointment			
1	Faculty of Computer Science and Software Engineering Universiti Malaysia Pahang	Program External Examiner	1.12.2020 – 30.11.2022
2	Fakulti Computer Science and Information Technology Universiti Kebangsaan Malaysia	Program External Examiner	1.5.2020 – 30.4.2022
3	Fakulti Komputeran dan Informatik, Universiti Malaysia Sabah, Labuan	External Program Assessor	9-12 May 2016
4	Wawasan Open University, Penang	External Programme Assessor (BTSE)	13-17 Oct 2014
5	Faculty of Computer Science and Software Engineering Universiti Malaysia Pahang	Program External Examiner	1.12.2014 – 30.11.2016
6	Kolej Negeri, Nilai, Negeri Sembilan, Malaysia	Chairman Advisory Panel of Diploma in IT	1.5.05 – 30.4.2009

vi. Conferences and Training

Conference/Training	Organizer	Date

One month Research Attachment
  IndeForm, Lithuania
  University of Cantanbria, Spain
  University Seville, Spain
  University of Bradford, UK
	Euro-RISE Research Grant	15. March 2022 – 15 April 2022

One month Research Attachment University of Bournemouth, UK	Euro-RISE Research Grant	20 March - 20 April 2019
Keynote Speaker, International Conference in Information and Computational Sciences, , 27 March 2018	KRS College affiliated with Anna University, TamilNadu, India	27-28 March 2018
Judge, MAYA ANNUAL EXHIBITION 2017	Kurdistan Technical Institute, Sulaimaniyah, Kurdistan, Iraq	29-30 April 2017
Visiting Scholars, Universidad Politécnica de Madrid	Erasmus++ at UPM Madrid, Spain	30 Jan - 3 Feb 2017
Invited Participants, 2016 International Conference on Future Healthcare and Economic Development in Southeast Asia	National Cheng Kung University (NCKU), Taiwan	14-19 August 2016
Keynote Speaker, CAASR International Conferences Advanced Theoretical Computer Applications 2016	CAASR Canada at Kuala Lumpur	5 May 2016
Visiting Scholars, Duhok Polytechnic University	Duhok Polytechnic University, Kurdistan	15-22 Dec 2015
Keynote Speaker, 1st International Conference on Computer Science and Computational Intelligence	BINUS University, Jakarta	24-26 August 2015
Organizer,	UTM at Langkawi, Malaysia	3-5 Sept 2014

3

International Conferences on New Trends in Software Methodologies, Tools and Techniques (SOMET 2014)		
Organizer, Intelligent Information and Database Systems, 5th Asian Conference ACIIDS	UTM at Kuala Lumpur	18-20 March 2013
Keynote Speaker and Judge, Week of Science, Technology and Innovation, organized by YPJ Educational Group	YPJ, Johor Bahru	12 May 2011
Visiting Scholars, Robotic Industrial Tour	EUREKA Niaga at United Kingdom	12-16 Feb 1996
Research Attachment, IDB Training Scheme Award under Development and Industrial Technology Program/Asian Development Bank (PPTP/ADB	IDB Training Scheme, at Dept. of Electronic Engineering, University of Hull, United Kingdom	1 May – 31 July 1994

vii.   Publication:

Books

1. Habibollah Haron and Mohamad Shukor Talib (Eds), **Intelligent Data Analysis For Unstructured And Structured Data**, Edited Book, Penerbit UTM Press, 2022.
2. Hamido Fujita, Ali Selamat, Habibollah Haron (Eds.), **New Trends in Software Methodologies, Tools and Techniques,** Volume 265 of Frontiers in Artificial Intelligence and Applications, September 2014, 1128 pp., ISBN print: 978-1-61499-433-6
3. Selamat, Ali; Nguyen, Ngoc Thanh; Haron, Habibollah (Eds.), **Intelligent Information and Database Systems**, 5th Asian Conference, ACIIDS 2013, Kuala Lumpur, Malaysia, March 18-20, 2013, Proceedings, Part I, Series: Lecture Notes in Computer Science, Vol 7802, Subseries: Lecture Notes in Artificial Intelligence, 2013, XVIII, 530 p. ISBN 978-3-642-36542-3.
4. Selamat, Ali; Nguyen, Ngoc Thanh; Haron, Habibollah (Eds.), **Intelligent Information and Database Systems**, 5th Asian Conference, ACIIDS 2013, Kuala Lumpur, Malaysia, March 18-20, 2013, Proceedings, Part II, Series: Lecture Notes in Computer Science, Vol. 7803, Subseries: Lecture Notes in Artificial Intelligence, 2013, XVIII, 556 p, ISBN 978-3-642-36545-4.
5. Habibollah Haron, and Adzhar Kamaludin (2000), J.S. Milton, Jesse C. Arnold, Pengenalan Kebarangkalian dan Statistik: Prinsip dan Aplikasi bagi Kejuruteraan dan Sains Komputer Edisi Kedua (**Translation of Probability and Statistics: Principle and Application for Engineering and Computer Science 2nd Edition**), Penerbit UTM Press, 2000, ISBN 983-52-0181-1.
6. Adzhar Kamaludin, andHabibollah Haron (1998), Peggy Tang Strait, Kursus Asas Kebarangkalian dan Statistik Dengan Aplikasi Edisi Kedua (**Translation of Basic Course for Probability and Statistic with Application 2nd Edition**), Penerbit UTM Press, 1998 ISBN 983-52-0125-0.
7. Faridah Maarof, Mohd Yunus Majid and Habibollah Haron (1991), Robin J. Wilson, Pengenalan Teori Graf Edisi Ketiga (**Translation of Introduction to Graph Theory 3rd Edition**), Penerbit UTM Press, 1991, ISBN 983-9585-49-5.
8. Haron, Habibollah (2006), **Development of Computer Aided Three-Dimensional Geometric Modeler based on Designer's Idea in Two-Dimensiona**l, Penerbit UTM Press 2006, ISBN 978-967-353-193-6

Publications 2023-present (Selected publications)

Zakir Hussain Ahmed, Fateme Maleki, Majid Yousefikhoshbakht, Habibollah Haron (2023), Solving the vehicle routing problem with time windows using modified football game algorithm, Egyptian Informatics Journal, Volume 24, Issue 4, December 2023, 100403, Elsevier

AM Assaf, H Haron, HN Abdull Hamed, FA Ghaleb, SN Qasem (2023), A Review on Neural Network Based Models for Short Term Solar Irradiance Forecasting, Applied Sciences 13 (14), 833, MDPI

AR Khairuddin, R Alwee, H Haron (2023), Hybrid Neighbourhood Component Analysis with Gradient Tree Boosting for Feature Selection in Forecasting Crime Rate, Journal of Information and Communication Technology 22 (2), 207-229

Zhang, J., Mohd Yunos, Z. , Haron, H. (2023), Interactivity Recognition Graph Neural Network (IR-GNN) Model for Improving Human–Object Interaction Detection, Electronics 12 (2), 470, MDPI

Sharbini, H., Sallehuddin, R., Haron, H. (2022), Optimizing the Social Force Model Using New Hybrid WOABAT-IFDO in Crowd Evacuation in Panic Situation, Lecture Notes in Computer Science (including subseries Lecture Notes in Artificial Intelligence and Lecture Notes in Bioinformatics), 2022, 13651 LNAI, pp. 133–145

Saeed, S., Haron, H., Jhanjhi, N. Z., Naqvi, M., Alhumyani, H. A., & Masud, M. (2022). Improve correlation matrix of Discrete Fourier Transformation technique for finding the missing values of MRI images. Mathematical Biosciences and Engineering, 19(9), 9039-9059.

Anzong Zheng, Zaiping Zhu, Shaojun Bian, Jian Chang, Habibollah Haron, Andres Iglesias, Lihua You, Jianjun Zhang (2022), Optimized unidirectional and bidirectional stiffened objects for minimum material consumption of 3D printing, Mathematics, Article No. 1378596, MDPI

VS Chan, A Iglesias, H Haron, PJ Prada, S Ruiz, A Gálvez, L You, Mohamed, F. (2022), Virtual Reality Prototype of a Linear Accelerator Simulator for Oncological Radiotherapy Training, International Conference on Computational Science, Lecture Notes in Computer Science (including subseries Lecture Notes in Artificial Intelligence and Lecture Notes in Bioinformatics), 13352 LNCS, pp. 676–689

Zheng, A., Zhu, Z., Bian, S., Chang, J., Haron, H., Iglesias, & Zhang, J. (2021). Optimized Unidirectional and Bidirectional Stiffened Objects for Minimum Material Consumption of 3D Printing. Mathematics, 9(21), 2835. H Sharbini, R Sallehuddin, H Haron (2021), Crowd evacuation simulation model with soft computing optimization techniques: a systematic literature review, Journal of Management Analytics 8 (3), 443-485, Taylor

DA Zebari, DA Ibrahim, DQ Zeebaree, H Haron, MS Salih (2021), Systematic review of computing approaches for breast cancer detection based computer aided diagnosis using mammogram images, Applied Artificial Intelligence 35 (15), 2157-2203

A Z Zheng, S J Bian, E Chaudry, J Chang, H Haron, L H You, J J Zhang (2021), Voronoi Diagram and Monter-Carlo Simulation based Finite Element Optimization for Cost-Effective 3D Printing, Journal of Computational Science, Vol 50, March 2021, 101301, Elsevier

D Q Zebaree, A M Abdulazeez, D A Zebari, H Haron, H N Abdull Hamed (2021), Multi-Level Fusion in Ultrasound for Cancer Detection Based on Uniform LBP Features, Computers, Materials & Continua (CMC), Vol. 66, No. 3, pp. 3363-3382, , doi: 10.32604/cmc.2021.013314, Tech Science Press

DA Zebari, DQ Zeebaree, AM Abdulazeez, H Haron, HNA Hamed (2021), Improved threshold based and trainable fully automated segmentation for breast cancer boundary and pectoral muscle in mammogram images, IEEE Access 8, 203097-203116

Ali Syariati Mohd Salleh, Haza Nuzly Abdul Hamed, Mohd Adham Isa, Habibollah Haron (2020), Hydrofluoroether Impurities-Chemical Detection Using A Deep Learning Laser Speckle Contrast Evolving Spiking Neural Network. IEEE Access 26 Nov 2020

Dilovan Asaad Zebari, Diyar Qader Zeebaree, Adnan Mohsin Abdulazeez, Habibollah Haron, Haza Nuzly Abdull Hamed (2020), Improved Threshold Based and Trainable Fully Automated Segmentation for Breast Cancer Boundary and Pectoral Muscle in Mammogram Images, CMC, Volume 8, page 203097-203116, Tech Science Press

Anzong Zheng, Shaojun Bian, Ehtzaz Chaudhry, Jian Chang, Habibollah Haron, Lihua You, Jianjun Zhang (2020), Minimizing material consumption of 3D printing with stress-guided optimization, Proceedings International Conference on Computational Science, 3 June 2020, pages 588-603, Springer

Shereen S Sadiq, Adnan Mohsin Abdulazeez, Habibollah Haron (2020), Solving multi-objective master production schedule problem using memetic algorithm, Indonesian Journal of Electrical Engineering and Computer Science, Volume 18, Issue 2, Pages 938-945

Ehtzaz Chaudhry, Jian Chang, Hassan Ugail, Alexander Malyshev, Alfonso Carriazo, Andres Iglesias, Zulfiqar Habib, Allah Bux Sargano, Habibollah Haron, Algirdas Noreika, Lihua You, Jian Jun Zhang (2019), Modelling and Simulation of Lily flowers using PDE Surfaces, Publication date 2019/8/26, 2019 13th International Conference on Software, Knowledge, Information Management and Applications (SKIMA), Pages 1-8, Publisher IEEE

Dilovan Asaad Zebari, Habibollah Haron, Diyar Qader Zeebaree, Azlan Mohd Zain (2019), A Simultaneous Approach for Compression and Encryption Techniques Using Deoxyribonucleic Acid, Publication date 2019/8/26, 2019 13th International Conference on Software, Knowledge, Information Management and Applications (SKIMA), Pages 1-6. Publisher IEEE

Akemi Gálvez, Andrés Iglesias, Hassan Ugail, Lihua You, Habibollah Haron, Zulfiqar Habib (2019), Firefly Algorithm Approach For Rational Bézier Border Reconstruction of Skin Lesions from Macroscopic Medical Images, Publication date 2019/8/26, 2019 13th International Conference on Software, Knowledge, Information Management and Applications (SKIMA), Pages 1-8, Publisher IEEE

Yusliza Yusoff, Azlan Mohd Zain, Astuty Amrin, Safian Sharif, Habibollah Haron, Roselina Sallehuddin (2019), Orthogonal based ANN and multiGA for optimization on WEDM of Ti–48Al intermetallic alloys, Publication date 2019/6/1, Journal Artificial Intelligence Review, Volume 52, Issue 1, Pages 671-706, Publisher Springer Netherlands

Ravi Kumar Jha, Hassan Ugail, Habibollah Haron, Andres Iglesias (2018), Multiresolution Discrete Finite Difference Masks for Rapid Solution Approximation of the Poisson's Equation, Publication date 2018/12/3, 2018 12th International Conference on Software, Knowledge, Information Management & Applications (SKIMA), Pages 1-7, Publisher IEEE

Muhamad Yazid Che Abdullah, Habibollah Haron, Teresa Riesgo (2018), Energy Consumption of Wireless Sensor Based on IoT in a Parking Space With and Without Fuzzy Rules, Publication date 2018, Proceedings of the Second International Conference on the Future of ASEAN (ICoFA), Volume 2, Pages 403-412, Publisher Springer, Singapore

Mohd Faaizie Darmawan, Haswadi Hasan, Suriati Sadimon, Suhaila Mohamad Yusuf, Habibollah Haron (2018), A Hybrid Artificial Intelligent System for Age Estimation Based on Length of Left Hand Bone, Publication date 2018/2/1, Journal Advanced Science Letters, Volume 24, Issue 2, Pages 1047-1051, Publisher American Scientific Publishers

Muhammad A'rif Shah Alias, Habibollah Haron, Teresa Riesgo (2018), Fuzzy Rules Enhancement of CHEF to Extend Network Lifetime, Proceedings of the Second International Conference on the Future of ASEAN (ICoFA) 2017–Volume 2 Pages 393-402, Publisher Springer, Singapore

Research:

Active

1. Project Leader for UTM Team, **PDE-Based Geometric Modelling, Image Processing and Shape Reconstruction (PDE-GIR)**, Euro 112,500 for UTM allocation of total Euro 535,500 project funding, RISE European Union Research Grant, UTM Grant No. 778035, 1 Jan 2018 – 20 October 2023.

Completed
1. Project Leader, **Hybrid Semi-supervised SVM-RFE Feature Selection and Fuzzy SVDD-based Detection Model for Cancer Outlier**, RM86,500, FRGS 1 August 2016 till 31 July 2018, UTM Reference Number: R.J130000.7828.4F860
2. Project Leader, **Particle-based evolutionary Algorithm with new Fitness Functions and Occupancy Grid for Simultaneous Localization and Mapping (SLAM)**, 99,000.00, 1 July 2014- 30 June 2016, **FRGS**
3. Project Leader, **Improved Massive Training Based Technique For Automatic Segmentation Of Multiple Sclerosis Lesions In Magnetic Resonance Images**, 1 march 2014- 28 Feb 2016, 54,000.00. GUP
4. Researcher, **A New Harmony Search Meta-Heuristic for Freeman Chain Code Extraction Method**, FRGS, Dec 2013-Dec 2015

5. Project Leader, **A New Algorithm using Bone Microarchitecture for Age and Sex Determination in Forensic Anthropology**, FRGS Vot No , 1/6/2012 until 30/5/2014, RM171,000.00, *Vot. No.R.J130000.7828.4F115*

6. Project Leader, **Intelligent Dynamic Control of Robot Manipulators for Task Allocation,** Research University Grant Tier 1, RM120,000.00, 1/6/2012 until 30/5/2014., *Vot. No.Q.J130000.2528.03H04*

7. Researcher, **A Modified Multi-Objective Genetic Algorithm for estimating optimal solutions of machining parameters,** Research university Grant Tier-2 Cost Centre Code: Q.J130000.7128.01J34, UTM Vot No. 7128, 01/04/2011 until 31/03/2012, RM40,000.00

8. Project Leader, 3D Digital Map, 40k,Flagship UTM

9. Researcher, **Feature Vector and Hybrid Classifier of Handwritten Character Recognition,** GUP **Development of Handwritten Recognition by Means of Chain Code,** Dec 2012-Dec 2013

10. Researcher**, Parallel Computation in Solving Tangling and Necking Problem in Thinning Algorithm**, Malaysian Ministry of Higher Education, Fundamental Research Grant Scheme, RM51,000.00, 1 Sept 2009 – 1 Oct 2011.

11. Researcher**, Anti-Exhaustion Modeling using Soft Computing**, Malaysian Ministry of Higher Education, Fundamental Research Grant Scheme, RM51,000.00, 1 Sept 2009 – 1 Oct 2011.

12. Project Leader, **Development of Fuzzy Based Simulation System in Human-Involved Asembly Line Balancing**, E-Science Vot 79319, RM 151,800.00, 1 Nov. 08 – 30 June 10.

13. Project Leader, **Mapping and Visualization Algorithm of Vertex Chain Code from Thinned Binary Image**, Fundamental Research Grant Scheme UTM Vote No. 78191, RM100,000.00, 1 September 2007 – 31 August 2009.

14. Project Leader, **Failure Prediction of Cancellous Bone Using Mrophological Data of Trabecalulae Structure**, E-Science Research Grant, UTM Vote No. 79254, RM349,610.00, 1 December 07 – 31 May 09.

15. Project Leader, **Development of Product Life Cycle Design Tool Using Artificial Intelligence Technique**, E-Science Vote 79092, MOSTI 01-01-06-SF0134, RM121,000, 01 December 06 – 31 May 08

16. Project Leader, **How To Teach Robot Without Using Robot**, CTL, Vote 76546, RM5000.00, 1 September 07- 31 August 08.

17. Project Leader, **Development of Computer Aided Three-Dimensional Geometric Modeler Based Designer's Ideas in Two Dimensional**, IRPA Vote 74225 RM74,000.00, December 2003 – December 2005

18. PhD Student, PhD Title: **Enhanced Algorithms For Three-Dimensional Object Interpreter,** January 2000- December 2003

19. M. Sc. Student, M. Sc Project: **The Constructive Solid Geometry Modeler**, 1 June -30 September 1995

20. Researcher, **Development of Web-based Repository and Simulation System to Support Robotics**, E-Science Vot 79318, RM 179,300.00, 1 Nov. 2008 – 30 April 2010.

21. Researcher, **Length Estimator based on Vertex Chain Code**, UTM FRGS Vot 78365, RM51,000.00, 1 Nov 2008 – 1 Nov 2010.

22. Researcher, **Human Performance Parameters Predictions and Learning Curve Reconstruction in Assembly Line Balancing**, Ministry of Higher Education, Fundamental Research Grant Scheme Vot 78366, RM61,000.00, 1 Nov 2008 – 1 Nov 2009.

23. Researcher, **The Development of Low Cost ERP Prototype System for Malaysian SME using Open Source Software**, E-Science Research Grant, UTM Vote No. 79096, RM144,847.00, 1 December 06 – 31 April 09

24. Researcher, **Development of Intelligent 3D Solid Modeler Based on Artificial Intelligence Technique**, E-Science Vote 79093, MOSTI 01-01-06-SF0132, RM105,000, 01 December 06 – 31 May 08

Invention Property (IP)/Copyright

1. **Utility Innovation**: MY-178566-A, A Method of Determining a Three-Dimensional Blood Flow Visualization for a Cardiac, Filing 11 February 2014. Granted 16 Oct 2020,

2. **Intellectual Property:** PI20097007, Intelligent Neural Network 3D Solid Modeler, submitted August 2009. Approved February 2010.

3. **Copyright**: *Rekabentuk, Visualisasi dan Simulasi Proses Automasi Pemotongan Otak-Otak Gulung* (**Designing, Visualization and Simulation of Automated Chopping Process for *Otak-Otak***) (2009 Universiti Teknologi Malaysia – All Rights Reserved) – 3 Sept 2009

4. **Copyright**: *Aplikasi Rangkaian Neural Dalam Pengesanan Simpang Bagi Penterjemah Lakaran Pintar* (**Application of Neural Network in Corner Detection of Intelligent Sketch Interpreter**) (2009 Universiti Teknologi Malaysia – All Rights Reserved) – 3 Sept 2009

Fact and Figure (17 Oct. 2023)

Indexing link	h-index	Citations	Number of article
https://www.webofscience.com/wos ID: AAH-8140-2021	21	1677	104
https://www.scopus.com ID: 24450495700 ORCID: 0000-0002-3749-5364	28	2847	163
Google scholar	34	4766	260

International Research Grant	Euro112,500.00
National Research Grant	RM1,285,000.00
Graduated PhD students	23
Graduated MPhil students	19
Current PhD student	5
Current MPhil student	0
Internal UTM PhD Examiner	40
Internal UTM MPhil Examiner	8
External PhD Examiner	40
External MPhil Examiner	10
Master Project Supervision	22
Master UTM Internal Project/Dissertation Examiner	6
Master External Project/Dissertation Examiner	5
Undergraduate project supervised	120