Computer Science   Cyfrifiadureg

INTRODUCTION

For the Department, 2003 proved to be a relatively quiet year and a period of consolidation following the QAA review of 2002. The Department was awarded the highest marks in all categories for its teaching and has sought to build upon this during 2003 with new initiatives, including a virtual learning environment called Tweek being introduced to improve the teaching experience for students.

As the Department continues to expand in size, the space shortage as highlighted in last year's annual report, still remains at crisis point. The Department cannot expand to the extent outlined in the Department Planning Submission if this acute lack of space is not resolved. This lack of space is also having an adverse impact on Departmental research.

The Department hosted the AISB'03 convention in April. The AISB conventions are annual meetings of the major British Artificial Intelligence society and for the Department to be invited to host such a prestigious convention is a significant honour.

The Department would like to congratulate one of its honorary professors, Professor J M Brady on the award of a Knighthood and to Ross King on his professorial appointment.

The Department welcomed two new members of staff, Peter Simmonds as Commercial Manager of CASIS and Meinir Thomas as Departmental Administrator. Dr. Dave Barnes became the new Director of Research.

TEACHING

The Department continues to expand in size and this year saw the first students graduate on the Internet Computing scheme. The Space Science and Robotics degree came on line this year and initial approval has been obtained for a new Business Information Technology degree, which we hope will start in September 2004.

Other exciting initiatives have included the introduction of Tweek with the aim of providing a virtual learning environment for students. It is a web-based system designed to support online assessment, tests and coursework feedback whilst allowing staff greater flexibility in preparing multiple-choice exam papers. Thanks to support from Information Services and Staff Development, it is also available for use by other Departments. To reflect the aims of Tweek, the majority of first year exams are now held online. The advanced use of learning objectives ensures that maximum feedback is given to students helping them with their studies. Attendance tracking and reporting, another new feature, enables students to be better aware of their attendance profile and enables staff to identify student problems earlier with the hope that they can be resolved.

The Department's Outward Bound weekend for first years in Aberdyfi continues to be popular with the students. This unique feature of the Department is followed by a second year career preparation weekend in Gregynog. The weekends are designed to foster a sense of teamwork amongst the students and prove invaluable when they participate in group project work during the course of their studies. The weekend has achieved national recognition with an article appearing in the THES in Spring 2003.

The Computer Science team continued to give a good account of themselves in the Annual Careers Fair 'Student Skills Competition'. The consistently high achievement of Computer Science in the competition reflects the emphasis placed upon career related activities in our courses.

Members of the Department's academic staff continue to be in demand as external examiners for courses in other institutions. In 2003, they examined at the Universities of East London, Glamorgan, Central Lancashire, Staffordshire, Hertfordshire, Essex, Cranfield (Royal Military College of Science),

the Open University, the University of Malaysia and the British Hellenic College, Athens.

RESEARCH

2003 has been an exciting year for the Department. Following the award of a £1.2m research grant in 2001 by the Food Standards Agency to the Computational Biology Group, the Department in April ran a workshop on 'Experimental Design and Statistics' for the Food Standards Agency as part of this research programme.

The Space Robotics aspect of the Intelligent Robotics Group's research has continued to attract a considerable amount of interest from the media, government and other research groups. The group was a key member of the Beagle 2 Mars Lander consortium. The Beagle 2 programme was a British led quest to land on Mars as part of the European Space Agency's (ESA) Mars Express Mission. The Mars Lander was launched in June 2003 and the group spent 2003 finalising the lander's robot ARM calibration, software modelling and simulation for operations support and ARM commanding during the mission. The group began work also on an ESA funded project to develop an imaging and localisation software system for a future Martian helium balloon based vehicle.

The Department was given the honour of hosting the AISB'03 convention in April and it proved to be a remarkable success, exceeding all targets. The convention contributed significantly to the UK's research base in the worldwide field of 'Cognition in Machines and Animals'. The Vice-Chancellor opened the convention which consisted of five specialist symposia and a set of keynote lectures given by six top international speakers. Delegates attended from many countries, including over forty postgraduate research students who were all awarded bursaries. We are very grateful for the support provided by EPSRC funding. The Department has received nothing but positive feedback from those who attended the conference. The department has been working with the Physics Department to establish a Centre of Excellence for Visualisation in Wales. The Centre, to be funded by a combination of WEFO Objective 1,Higher Education and Private Sector money, is planned as a commercial operation and will serve as a catalyst for business and public collaboration projects with the University. As currently envisaged this £10m project will initially make a tremendous impact on the economy of Mid Wales. Computer Science and Physics have also helped to establish VizNet Wales, a network of visualisation expertise with our colleagues at Bangor, Swansea and Cardiff.

One of the symposia of the AISB'03 convention was organised by members of the department: the Biologically Inspired Machine Vision, Theory and Applications symposium. It was a great success and the organisers were very proud to have a world recognised researcher as invited speaker: Yiannis Aloimonos.

The Centre for Advanced Software and Intelligence Systems (CASIS) has continued to go from strength to strength and has succeeded in securing another year's funding following a review last year. CASIS is a WDA Centre of Excellence and is a joint venture between the Computer Science Departments at the University of Wales, Aberystwyth and Cardiff University. The Centre is funded by ELWa, WDA and the NAFW, and is a DTi recognised centre of software engineering excellence. It specialises in software innovation, development and exploitation and can serve industry and business in their widest sense. It is focussed on providing new technologies, creating added-value solutions and enhancing commercial growth in Wales, together with providing the expertise of welsh academics both nationally and internationally. The Centre has received positive feedback from many clients with whom it has dealt with during 2003.

The Department's Vicon Motion Capture System was used by Broadsword Interactive Ltd of Aberystwyth, for the launch of their product "Dance UK". This gave UK-wide publicity to the Department, as reported by amongst others, BBC 1, S4C and The Independent.

The Department has continued its activities providing telematics assistance and advice to national bodies such as UKERNA. 2003 has seen the department expand its work in the area of multicast Internet transmission, an area that is continuing to evolve greatly whilst continuing work in the area of Internet based videoconferencing using ITU standard H.323. The Department continues to provide advice to UK academics as part of our role in the JANET Video Technologies Advisory Service. We have made a substantial contribution to the availability of multicast advice to UK academics as a result of the publication of our new UKERNA Technical Guide in this area.

In the Model-Based Reasoning Group, the second phase of the MONET project (MONET2) is progressing well. UWA is the Co-ordinator of the MONET Project, the European Network of Excellence in Model-based Systems and Qualitative Reasoning, two complimentary branches of AI. The Network has 80 Member Institutions worldwide and is focused at Industrial Transfer of these technologies in four application domain areas - Automotive, Bio-Medical, Education & Training and Applied diagnostics.

PUBLICATIONS

Allen, J K, Davey, H M, Broadhurst, D, Heald, J K, Rowland, J J, Oliver, S G. and Kell, D B. High-throughput Characterisation of Yeast Mutants for Functional Genomics Using Metabolic Footprinting. *Nature Biotechnology,* **21**, (2003), pp692-696.

Barnes, D P and Counsell, M S. Haptic Communication for Mobile Robot Operations. Industrial Robot: *An International Journal: An International Journal,* **30***, 6*, (2003), pp552-563 ISSN: 0143-991X.

Barnes, D P, Phillips, N and Parr, G, Beagle2 Simulation and Calibration for Ground Segment Operations. *7th International Symposium on Artificial Intelligence, Robotics and Automation in Space (i-SAIRAS),* Japan, 2003. CD-ROM proceedings.

Barnes, D P, Imaging and Localisation Software Demonstrator for Planetary Aerobots. *Fifth IAA International Conference on Low-Cost Planetary Missions.* ESTEC, September 2003.

Barnes, D.P and Henley, J J, Adaptive Obstacle Stepping for a Walking Robot Upon Irregular Terrain. *The 4th British Conference on (Mobile) Robotics "Towards Intelligent Autonomous Robots" (TIMR '03),* Bristol, August 2003.

Ellis, W, Ratcliffe, M.B, and Thomasson, B, Invited Keynote Address: *Promoting Fairer Grading of Group Based Assessment Using Collaborative IT Tools,* 7th International Computer Assisted Assessment (CAA) Conference, Loughborough University, UK, July, 2003

Garrett, S M, A Paratope is not an Epitope: Implications for Clonal Selection and Immune Networks. *ICARIS-2003, Springer-Verlag Lecture Notes in Computer Science (in press) No. 2787,* Edinburgh, September 1st-3rd, 2003, pp217-228

Garrett, S M and White, J, Improved Pattern Recognition with Artificial Clonal Selection. *ICARIS-2003, Springer-Verlag Lecture Notes in Computer Science (in press) No. 2787,* Edinburgh, September 1st-3rd, 2003, pp181-193.

Garrett, S M and Walker, J H, Dynamic Function Optimisation: Comparing the Performance of Clonal Selection and Evolutionary Strategies. *ICARIS-2003, Springer-Verlag, Lecture Notes in Computer Science, No.2787,* Edinburgh, September 1st-3rd, 2003, pp273--284

Gunstone, R and Lee, M H, An Hysteresis-Habituation Mechanism for Sensorimotor Scaffolding.

In: *Proceedings of AISB'03 Second International Symposium on Imitation in Animals and Artifacts,* 2003, pp189-190.

Holloway, J and Ratcliffe, M.B, Poster entitled: Development of a MLE by Students for Students using Extreme Programming Techniques, The 7th Annual Conference on Innovation and Technology in Computer Science Education, Macedonia, Greece, 2003.

Holstein, **H,** Gravimagnetic Anomaly Formulas for Polyhedra of Spatially Linear Media. *Geophysics,* **68** (2003), pp157-167.

Holstein, H and E.M. Sherratt, E M, Performance of Gravimagnetic Anomaly Algorithms for Uniform Polyhedra. *International Geophysical Conference and Exhibition,* Moscow, Russia, September 1st-4th, 2003.

Holstein, H and Sherratt, E M, Performance Metrics for Computing Gravi-magneto Anomalies, SEG/IAGO/EAGE/PAEH International Conference, Moscow 2003.

Holstein, H, Asymptotically Improved Gravimagnetic Anomaly Formulas for Linear Medium Polyhedra. *SEG 2003 International Exposition and 73rd Annual Meeting,* October 2003, Dallas. 1st -4th, Dallas, Texas October 26th-31st, 2003.

Hunt, J and Loftus, C, W, *Guide to J2EE: Enterprise Java,* Springer, 2003.

Labrosse, F and Holstein, H, Proceedings of the AISB'03 Symposium on Biologically-Inspired Machine Vision, Theory and Application. Published by the Soc. A.I and Sim Behaviour (www.aisb.org.uk), UW, 2003, ISBN: 1-902956-33-1.

Labrosse, F, On the Editing of Images: Selecting, Cutting and Filling-in. In: *Proceedings of the International Conference on Vision, Video, and Graphics,* Bath, UK, 2003, pp71-78

Lacey, N J and Lee, M H, The Epistemological Foundations of Artificial Agents, *Minds and Machines,* **13**, 2003, pp339-365

Lacey, N J and Lee, M H, The Implications of Philosophical Foundations for Knowledge Representation and Learning in Agents, *Springer-Verlag Lecture Notes on Artificial Intelligence,* **2636** on Adaptive Agents and Multi-Agent Systems, 2002.

Lacey, N J and Lee, M H, The Implications of Philosophical Foundations for Knowledge Representation and Learning in Agents. In: *Lecture Notes in Computer Science, Adaptive Agents and Multi-Agent Systems: Adaptation and Multi-Agent Learning,* Springer-Verlag Heidelberg, Eds: Alonso, A, Kudenko, D, and Kazakov, D, **2636** (2003), pp216-238, ISSN: 0302-9743

Lee, M H and Lacey, N J, The Influence of Epistemology on the Design of Artificial Agents, *Minds and Machines,* **13**, 2003, pp367-395

Lescuyer, P, translated and edited by **Bott, M F,** *UMTS: Origins, Architecture and the Standard.* Springer, 2003, pp xi+267.

Li, B and Holstein, H, Using Ratio k-d Tree for Robust 3D Point Pattern Matching. *The 4th International Conference on 3-D Digital Imaging and Modeling*, Banff, Alberta, Canada. October 6th-10th, 2003

Li, B, Meng, Q and Holstein, H, Point Pattern Matching and Application - a Review. *IEEE International Conference on Systems, Man & Cybernetics,* Washington, D.C., USA, October 5th-8th, 2003.

Li, B and Holstein, H, Perception of Human Periodic Motion in Light Displays. In: *Proceedings of the Symposium on Biologically-Inspired Machine Vision, AISB 2003 Convention on Cognition in Machines and Animals,* Aberystwyth, April 2003.

Liu, Y, Robust Geometric Registration of Overlapping Range Images. In: *Proceedings of IEEE International Conference on Industrial Electronics, Control and Instrumentation (IECON'03),* Virginia, USA, November 2nd-6th, 2003, pp2494-2499.

Liu, Y and Wei, B, Evaluating Structural Constraints for Accurate Range Image Registration. In: *Proceedings of the 4th International Conference on 3D Digital Imaging and Modelling (3DIM'03),* Banff, Alberta, Canada, October 6th-10th, 2003, pp187-194.

Liu. Y and Wei, B, Free from Surface Matching Using Motion Consistency. In: *Proceedings of IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS 2003),* Las Vegas, USA, October 27th-31st, 2003, pp1572-1577.

Liu, Y and Wang, Y, Evaluating 3D-2D Correspondences for Accurate Camera Pose Estimation from A Single Image. In: *Proceedings of 2003 IEEE International Conference on Systems,* *Man & Cybernetics (SMC'03),* Hyatt Regency, Washington, D.C., USA, October 5th-8th, 2003, pp703-708.

Meng, Q and Lee, M H, Adapting Home Service Robot Behaviours by Experience Reuse and Interaction with Humans. In: *IEEE/ASME International Conference on Advanced Intelligent Mechatronics,* Kobe, Japan, July, 2003.

Neal, M., Timmis, J, Timidity: A Useful Emotional Mechanism for Robot Control? *Informatica,* **27** (2003), pp197-204.

Neal, M, Meta-stable Memory in an Artificial Immune Network. To appear in: *Proceedings of ICARIS 2003,* Edinburgh, September 2003

Price, C J, Improving Process Design: Knowledge Sharing in Aluminium Foundries. In: *Applying Knowledge Management: Techniques for Building Corporate Memories,* by Watson, I. Morgan Kaufmann, 2003, pp121-138.

Price, C J, Snooke, N A and Lewis, S D, Adaptable Modelling of Electrical Systems. In: Proceedings *17th International Workshop on Qualitative Reasoning QR'03,* Brasilia, Brazil, August 20th-22nd 2003, pp147-153

Price, D E and Spence, A J, *IP Multicast on JANET.* UKERNA. GD/JANET/TECH/006 (03/06) http://www.ja.net/documents/tg-IPMulticast.pdf

Ratcliffe, M.B and Thomas, L A, Enhancing the Employability of Student Software Engineers, *Engineering Education 2003, IEE,* London, January 2003, ISSN: 0963-3308, pp31/1-31/5.

Ratcliffe, M B, Thomas, L A, Ellis, W, and Thomasson, B, Collaborative Designs to Assist the Pedagogical Process. The 7th Annual Conference on Innovation and Technology in Computer Science Education, Macedonia, Greece, 2003.

Ridgway, M, Ratcliffe, M B and Ellis, W, VorteX – Enhancing the Pedagogy in Software Development Education, *ASISIT Annual Meeting,* Long Beach, California, US, October 2003.

Rowland, J J, Model selection methodology in supervised learning with evolutionary computation. *Biosystems,* 72, 1-2, (November 2003), pp187-196.

Rowland, J J, Generalisation and Model Selection in Supervised Learning with Evolutionary Computation. European Workshop on Evolutionary Computation

and Bioinformatics, 2003. *Lecture Notes in Computer Science,* **2611** (2003) pp 119-130

Shaw, A J and Barnes, D P. Landmark Recognition for Localisation and Navigation of Aerial Vehicles. *IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS),* Las Vegas, October 2003.

Sherratt, E M, (Ed.) Telecommuincations and Beyond: the Broader Applicability of SDL and MSC (Proc. SAM 2002), *Springer LNCS 2599, Springer 2003.*

Thomas, L A., Ratcliffe, M B, and Robertson, I A, Code Warriors and Code-a-Phobes: A Study in Attitude and Pair Programming, SIGCSE 2003, Technical Symposium on Computer Science Education, Reno, Nevada, USA, February 19-23, 2003.

Walker, J, Garrett, S and Wilson, W, Evolution for Real Robots: A Structured Survey of the Literature, *Journal of Adaptive Behaviour,* **11,** 3, (2003), pp179-203

Walker, J and Garrett, S, Dynamic Function Optimisation: Comparing the Performance of Clonal Selection and Evolution Strategies. In ICARIS-2003, Springer-Verlag, *Lecture Notes in Computer Science No.2787, pp217-228.*

Wei, B, Liu, Y and Pan, Y, Using Hybrid Knowledge Engineering and Image Processing in Color Virtual Restoration of Ancient Murals. In: *IEEE Transactions on Knowledge and Data Engineering,* **15**, 5, (2003), pp1338-1343.

MEMBERSHIP OF ADVISORY BODIES

Barnes, D P. Member of the EPSRC Peer Review College 2003-2005. Member of the Panel of Examiners for the British Computer Society (BCS) Professional Examination Board.

Bott, M F. Member of the British Computer Society Academic Accreditation Panel. Member of the British Computer Society Professional Examinations Board. Member of the British Computer Society Course Providers Panel.

Garrett, S M. Publicity chair for the yearly International Conference in Artificial Immune Systems. Editor and Chair for the AISB symposium in 'The Immune System and Cognition'.

Hardy, N W. Chair of Workshop session on Databases: First International Congress Plant Metabolomics, April 2002, Wageningen, The Netherlands. http://www.metabolomics.nl/ Member of the BBSRC IGF Bioinformatics Panel. Chair of a workshop on LIMS and metabolic database systems. Plant Metabolomics Congress. Potsdam, Germany. April, 2003. http://www.metabolomics-2003.mpg.de/program.html

Holstein, H. Chairman for the AISB'03 Cognition in Machines and Animals Symposium, UW Aberystwyth, 7th-11th April 2003. Technical session co-chairman at International Geophysical Conference and Exhibition, Russia, Moscow, Sovincenter, September 1-4, 2003. OS9/1425 1-4.

King, R D. Member of the BBSRC EBS Committee. Member of the BBSRC Bioinformatics Panel. Member of the JISC Committee. Successful contributor to "Computing Grand Challenge" GCProposal-1 "In Vivo <=> In Silico".

Labrosse, F. Reviewer, IEA/AIE-2003 Conference (published by the LNCS series). Co-editor, AISB Journal, Volume 1, Number 4.

Lee, M H. Member of the EPSRC Peer Review College for Computing. Member of the Programme Committee for TIMR 03, the 4th British Conference on Mobile Robotics, August 28th and 29th in Bristol. Member of the Program Committee of the 17th International Workshop on Qualitative Reasoning (QR2003), Brasilia, Brazil. Member of the Advisory Board of the First International Conference on Design Computing and Cognition (DCC'04). Member of the Program Committee of the 16th International Conference on Industrial & Engineering Application of Artificial Intelligence & Expert Systems (IEA/AIE-2003), Loughborough, June 2003. Co-opted Member of the Committee of the Society for the Study of Artificial Intelligence and the Simulation of Behaviour. Executive Team Member of IEE Robotics Mechatronics Professional Network. Founder member of the Mid Wales Technium Management Board. Referee for Carnegie Centenary Visiting Professorships for The Carnegie Trust for the Universities of Scotland. Reviewer for papers for IJCAI-03.

Long, F W. UoW moderator for the Business Computing and IT, and Computer Science degree schemes taught by Informatics, Singapore. Visiting Researcher at Software Engineering Institute, Carnegie Mellon University.

Neal, M J. Member of the Steering Committee of ICARIS 2004. Member of the Executive Board of ARTIST. Member of the Program Committee for the

Second International Conference on Artificial Immune Systems (ICARIS 2003). Member of the review panel for the Genetic and Evolutionary Computation Conference (GECCO 2003).

Price, C J. Member of 17th International Workshop on Qualitative Reasoning, QR'03. Member of 14th International Workshop on Principles of Diagnosis, DX03.

Ratcliffe, M B. SIGCSE Doctor Consortium Discussant – February 2003, Reno, Nevada, USA. SIGCSE. Undergraduate Student Research Competition Judge – 34th ACM SIGCSE Technical Symposium on Computer Science Education, February 2003, Reno, Nevada, USA. Invited member of the Committee of ITICSE 2005, the 10th Annual ACM Conference on Innovation and Technology in Computer Science Education, to be held in Portugal. ITICSE Undergraduate Research Competition Organiser for ACM Conference, Portugal, 2005. Member of Advisory Board for Karachi Institute of Technology, Pakistan.

Rowland, J J. Member of the International Programme Committees for PPSN '02, EVoBio 2003, EVoBio 2004 (Portugal), IEEE CEC '04 (Portland, Oregon). Member of the IEEE (NNS) Task Force on Bioinformatics and Computational Biology. Member of EPSRC Research Cluster on Molecular and Cellular Computing. Session Chair at EvoBio 2003. Grant referee for the BBSRC and EPSRC.

Sherratt, E M. Member of the Programme Committee for SDL-2003: the 11th SDL Forum, Stuttgart, July 2003.

Struss, P and Price, C J, Model-based Systems in the Automotive Industry, *AI Magazine special issue on Qualitative Reasoning,* **24** (4), (Winter 2003), pp17-34

Thomas, L T. Served on the Program Committee for ACE 2004 (Australian Computer Education Conference). Served as reviewer for Computer Science Education – special issue on Import/Export to Computer Science Education, 2003. Served as reviewer for SIGCSE Doctoral Consortium 2003.

MEMBERSHIP OF EDITORIAL BOARDS

Bott, M F. Member of the Editorial Board of the BCS/Springer Practitioner Series.

Lee, M H. Member of the Editorial Board of Artificial Intelligence Communications. Member of the Editorial Board of Advanced Engineering Informatics. Member of the Editorial Board for PhD thesis publications within ECCAI (European Coordinating Committee for Artificial Intelligence). Member of the Editorial Board of Schedae Informaticae (Institute of Computer Science, Jagiellonian University, Kraków, POLAND).

Liu, Y. Guest editor for the special issue of Computer Vision and Pattern Recognition on The Registration and Fusion of Range Images, Vol. 87, No. 1/2/3, pp. 1-131.

Price, C J. Member of the Editorial Board of the Journal of Engineering Applications of Artificial Intelligence.

RESEARCH GRANTS AND CONTRACTS RECEIVED

Researchers:	D P Barnes
Sponsors:	EPSRC
Research Area:	Model Based Methods for Kinematics Fault Diagnosis & Remediation.
Financial Support:	£250,201

Researchers:	D P Barnes
Sponsors:	European Space Agency
Research Area:	Planetary Aerobots: Imaging and Localisation Package for a Martian Balloon.
Financial Support:	£150,000

Researchers:	S M Garrett
Sponsors:	EPSRC
Research Area:	NETWORK: ARTIST: A Network for Artificial Immune Systems.
Financial Support:	£62,564

Researchers:	S M Garrett, J Walker
Sponsors:	UWA
Research Area:	Defining the Most Efficient Operators for Evolutionary Optimisation of a Dynamic Function.
Financial Support:	£2,000

Researchers:	R D King and J J Rowland
Sponsors:	EPSRC
Research Area:	Novel Machine Learning Approaches to Molecular Coherent Control.
Financial Support:	£155,409

Researchers:	M H Lee
Sponsors:	HEED fund
Research Area:	Bio-electric Modelling
Financial Support:	£6,000

Researchers: M H Lee
Sponsors: EPSRC
Research Area: Cognition in Machines and Animals – AISB'03 Convention.
Financial Support: £14,524

Researchers: D E Price
Sponsors: UKERNA
Research Area: JANET Video Technologies Advisory Service. Technical Advisor
Financial Support: £4,000

Researchers: D E Price, A J Spence
Sponsors: UKERNA
Research Area: Production of a new JANET Multicast Technical Guide
Financial Support: £3,500

Researchers: I M Scott, N W Hardy, R D King, J J Rowland, J H Draper, R G Goodacre, D B Kell
Sponsors: BBSRC
Research Area: Hierarchical Plant Metabolomics for Gene Function and Mode of Action Discovery
Financial Support: £462,596

Researchers: M Wilson
Sponsors: UWA
Research Area: Lifelong Evolution for mobile robots – Schema Parameter Evolution.
Financial Support: £3,000

In addition, the following research work funded by outside institutions continued during 2003.

Researchers: B Alsberg
Sponsors: EPSRC
Research Area: Solving Peak Shift Problems in Infrared Spectroscopy with the Peak Parameter Representation (PPR)
Financial Support: £62,439

Researchers: J Draper, D B Kell, R Goodacre, A R Smith, R Darby, C J Price, R D King, J J Rowland, N W Hardy
Sponsors: Food Standards Agency
Research Area: Metabolome Technology for the Profiling of GM and Conventionally Bred Plant Materials
Financial Support: £1,206,603

Researchers: D B Kell, J J Rowland
Sponsors: BBSRC
Research Area: Registration and Compression of Proteome Gel Images
Financial Support: £185,388

Researchers: R D King, J J Rowland, D B Kell
Sponsors: BBSRC
Research Area: The Robot Scientist: Application to Functional Genomics
Financial Support: £313,380

Researchers: R D King
Sponsors: BBSRC
Research Area: Prediction of Protein Function in Plant Genomes Using Data Mining
Financial Support: £164,992

Researchers: R D King
Sponsors: British Council
Research Area: Modular Characterisation of Metallothioneins
Financial Support: £1,600

Researchers: M H Lee
Sponsors: Welsh Development Agency, HEFCW, NAW
Research Area: Centre of Excellence for Technology & Industrial Collaboration
Financial Support: £300,000

Researchers: M H Lee
Sponsors: EPSRC
Research Area: Developmental Learning Algorithms for Embedded Agents
Financial Support: £208,307

Researchers: M H Lee, C J Price
Sponsors: European Commission
Research Area: MONET 2 - Network of Excellence
Financial Support: £465,959

Researchers: J J Rowland, D B Kell, M K Winson
Sponsors: BBSRC
Research Area: Combinatorial Optimisation in Directed Evolution Experiments - A Systematic Approach
Financial Support: £265,904

Researchers: J J Rowland, D B Kell
Sponsors: BBSRC

| Research Area: | A Noninvasive Nonlinear Dielectric Spectrometer |
| Financial Support: | £270,204 |

Researchers:	N N Snooke, C J Price
Sponsors:	EPSRC
Research Area:	Automated Safety Analysis of Software in Electronic Systems
Financial Support:	£150,352

LECTURES AND ADDRESSES TO LEARNED SOCIETIES AND CONFERENCES

Hardy, N W. Emerging database standards for metabolome data, North West Metabolomics Group. UMIST. 17th July 2003.

Holstein, H. Paper presented at the International Geophysical Conference and Exhibition, Russia, Moscow, Sovincenter, September 1-4, 2003. OS9/1425 1-4. Paper presented at the SEG 2003 International Exposition and 73rd Annual Meeting, October 2003, Dallas. 1-4. Dallas, Texas October 26-31, 2003. Invited seminar presented at the Department of Computer Science, University of Puget Sound, WA. (Oct 14, 2003). Invited seminar presented at the US Geological Survey, Melo Park, CA. (October 17, 2003).

Labrosse, F. On the editing of images: selecting, cutting and filling-in, International Conference on Vision, Video, and Graphics, Bath, July 2003

Lee, M H. Developmental Learning and its importance for Brain and Mind, given at Workshop on Grand Challenge 5: Architecture of Brain and Mind, Monday 5th January at De Montfort University, Leicester.

Neal, M J. ICARIS 2003.

Ratcliffe, M B. Invited keynote speaker at the 7th International Computer Assisted Assessment (CAA) Conference. Loughborough University, UK, July 2003. Invited speaker at the Annual Conference of Graduate Recruiters, Celtic Manor, Newport, July 2003 to speak on the efforts that Computer Science has been making in enhancing employability.Academic Advisor for Doctoral Consortium, 34th ACM SIGCSE Technical Symposium on Computer Science Education, Nevada, USA, 2003.
Walker, J. Dynamic Function Optimisation: Comparing the Performance of Clonal Selection and Evolution Strategies; ICARIS 2003 Conference, 03/09/2003.

POSTGRADUATE SCOLARSHIPS AND STUDENTSHIPS

Aberystwyth Postgraduate Research Studentships were awarded to Jonathan Holloway

Departmental Awards were awarded to Hong Zhou

HIGHER DEGREES AWARDED

PhD

Clare, Amanda, Machine Learning and Data Mining for Yeast Functional Genomics.

Li, Baihua, Recognition of Articulated Motion with Sparse Feature Points.

Meng, Qinggang, Control & Learning in Behaviour-Based Domestic Science Robotics.

Shaw, Andrew, Terrain Feature Identification for Localisation & Navigation of planetary aerobots.

Walker, Joanne, Experiments in Evolutionary Robotics: Investigating the Importance of Training and Lifelong Adaptation by Evolution

Wu, Guofu, Incremental State based diagnosis of Dynamic Physical Systems.

MPhil

Daud, Md. Nor Ridzuan, Learning Qualitative Models of Physical Systems.

MSc

The Degree of MSc in Computer Science was awarded to 36 candidates, including 8 who studied for the degree in Singapore.

CONFERENCES

Hardy, N W. Experimental design and statistics workshop for the Food Standards Agency G02 programme. UW Aberystwyth, April 2003.

Holstein, H. Chairman of the Organising Committee for the Symposium on Biologically-inspired computer vision, theory and practice, AISB'03 convention, UW Aberystwyth, April 7th-11th 2003.

Lee, M H. Convention Host and Programme Chair for AISB'03, UW, Aberystwyth, 7-11 April 2003.

Labrosse, F. Co-Chair, Biologically-inspired Machine Vision, theory and Application, symposium of the AISB convention, UW Aberystwyth, April 7th-11th 2003.

Long, F W. Member of the organizing committee for ICCBSS 2003 (International Conference on COTS-Based Software Systems.

Neal, M J. ICARIS 2003.

Sherratt, E M. Program and Organisational co-chair for SAM 2002 international workshop on SDL and MSC). Member of the 11th SDL Forum Programme Committee (Stuttgart 2003). Member of the SAM 2004 Programmme Committee (Ottawa, 2004).

Walker, J (assisted by **Wilson, M**). Biro-Net Symposium. AISB 2004 (assisted by **Lee, M H**).

Wilson, M . Member of EPSRC peer review College. Treasurer for International Society for Adaptive Behaviour. Member of the Programme Committee for SAB '02, TIMR 01, TIMR '03. Conference treasurer for SAB'04.