SETHU VIJAYAKUMAR

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PROFESSIONAL SUMMARY

Aug 2006 ~ present — **University of Edinburgh** — Edinburgh, U.K.
Associate Professor, School of Informatics
Director, Institute for Perception, Action and Behavior (IPAB)

Aug 2003 ~ present — **University of Southern California** — Los Angeles, CA, USA.
Adjunct Assistant Professor (Dept. of Computer Science)
RIKEN Brain Science Institute — Saitama, JAPAN
Visiting Scientist, Lab for Mathematical Neuroscience

Aug 2003 ~ Jul 2006 — **University of Edinburgh** — Edinburgh, U.K.
Assistant Professor, School of Informatics

Jan 2000~ July 2003 — **University of Southern California** — Los Angeles, CA, U.S.A.
Presidential Postdoctoral Fellow & Research Assistant Professor (CS & Neuroscience)

Jan 2000 ~ Sep 2001 — **Kawato Dynamic Brain Project (ERATO/JST) @ ATR International** — Kyoto, Japan
Research Scientist (Joint Affiliation)

Mar 1998 ~ Dec 1999 — **RIKEN Brain Science Institute** — Saitama, JAPAN
Post Doctoral Fellow, Lab for Information Synthesis (Head: Prof. Shun-ichi Amari)

EDUCATION

1995- 1998 — **Tokyo Institute of Technology** — Tokyo, JAPAN
Ph.D. in Computer Science (April 1998)
Dissertation: Computational Theory of Incremental and Active Learning for Optimal Generalization
Formulated an exact incremental learning scheme using the theory of Reproducing Kernel Hilbert Spaces and used it for performing active learning by moving the optimization functional from the 'sample' space to the 'true function' space. Devised LASS, a nonparametric technique for incremental learning in high dimensional space, by exploiting the local low dimensional manifolds and dynamic locality adjustments.

1993- 1995 — **Tokyo Institute of Technology** — Tokyo, JAPAN
Masters in Computer Science (April 1995)
Thesis: An Incremental Approach to Training Data Selection in Neural Networks.
Employed a function analytic approach to formalize incremental learning for optimal generalization in neural networks under various optimization criteria. Used the above framework to discuss training data selection.

1988- 1992 — **Regional Engineering College, Tiruchirapalli** — Tamil Nadu, INDIA
B.Engg. in Computer Science & Engineering (May 1992)
Undergraduate Thesis: A Self-Organizing Controller using Fuzzy Logic.

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RESEARCH ACTIVITIES (external collaborations: INDUSTRY)

Jul. 2005 ~ **HONDA Research Institute GmbH - Europe** Frankfurt, Germany
Joint CASE Project: Controlling behaviors through combination of parameterized cost functions
Work on adaptive control and trajectory planning with ASIMO Humanoid Robot

Aug. 2005 ~ **Microsoft Research** Cambridge, U.K.
Project: Adaptive control and vision for sensorimotor learning
Initiated a collaboration on 'Active Vision and Adaptive Control for Learning Robotics'

Jul. 2005 ~ **SONY Computer Science Laboratories** Tokyo, Japan
Joint Project: SONY- France on sensorimotor dynamics and student exchanges with SONY – Tokyo on Reinforcement Learning.
Work on navigation and reinforcement learning using SONY Humanoid QRIO.

RESEARCH ACTIVITIES (external collaborations: UNIVERSITIES / RESEARCH LABS)

Aug.~Sep. 2001 **RIKEN Brain Science Institute** Saitama, Japan
Jul.~Aug. 2002 *Group Leader, Multimodal Interaction Robotic Research Project.* Initiated a project on Multimodal Interaction research with emphasis on sensory motor learning on a robotic vision head (MAVER*ic*) – a useful test bed for computational neuroscience models.

Mar.~Apr. 1999 **CLMC Lab (University of Southern California)** California**,** U.S.A.
Joint Research Project. Project: Analyzed and tested various projection based regression techniques for dimensionality reduction for local learning in high dimensional spaces.

Jul.~Aug. 2000 **ERATO Dynamic Brain Project** ***(PI: Dr. Mitsuo Kawato)*** Kyoto, JAPAN
Feb.~Mar. 1997 *Joint Research Project.* Project: Developed LASS, a non-parametric dimensionality reducing locally weighted learning scheme for incremental, on-line learning. Successfully tested in learning the sensorimotor transformation of a seven DOF dexterous robot arm.

Feb.~Mar. 1996 **Advanced Telecommunications Research International (ATR)** Kyoto, JAPAN
Aug.~Sep. 1996 *Joint Research Project.* Project: Incremental Learning in high dimensional spaces applied to motor control and sensorimotor learning of anthropomorphic robot arm.

Sep. 1990 **Bhabha Atomic Research Center** Bombay, INDIA
Internship. Project: Real time motion control of a Hexapod Walking Robot.

SCHOLASTIC AWARDS & HONORS

Apr. 2000 Nominated for Best Conference Paper in the International Conference On Robotics and Automation ICRA2000, San Francisco (5 best of out 600).

Aug. 1997 Awarded the NATO scholarship for the "Generalization in Neural Networks and Machine Learning" program at the Isaac Newton Institute for Mathematical Studies, Cambridge, U.K.

Apr. 1996 Received the IEEE-USA R.K.Wilson RAB award (1994-95) for outstanding leadership and services rendered to the student branch

1995-1998 Awarded the Japanese Government (Monbusho) Ph.D fellowship

Dec. 1995 Awarded the Best Student Paper Award at the International Conference on Neural Networks (ICNN'95), Perth, Australia.

Sep. 1995 Received the C & C Promotion Award (1995) for students from NEC Corporation, Japan.

1993-1995 Selected on merit for the award of Japanese Government (Monbusho) scholarship for postgraduate study.

Mar. 1992 Received the 'Outstanding Student of the Year '88-'92' and the 'Best Outgoing Student in Computer Science '88-'92 ' Awards (B.Engg.) from the Bharatidasan Univ.

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Dec. 1991	Received the Vincent-Bendix Award, IEEE-USA (1990-91) for the project on ultrasonic early detection and warning system.
Nov. 1991	Awarded the First Prize in Annual IEEE Student Paper Contest - Region 10 (1991).
2000	Biography included in the 'Marquis' Who's Who in the World' 2001 edition

RESEARCH GRANTS

2005-2009	**PI (Edinburgh) and Technical Coordinator**, Integrated Project **EU** FP6-2004-IST-4 'SENSOPAC' under Cognitive Systems call (**€7.4 million**) – Edinburgh share (**€1.1m**).
2005-2008	**PI**, **EPSRC** CASE studentship with HONDA Research Institute Europe GmbH for project on Humanoid Robot Control (**£81,664**).
2005-2006	**PI**, EuMI **Erasmus Mundus** visiting scholar funding for inviting Prof. Sugiyama (Tokyo Institute of Technology) for collaborative research (**€13,000** over 3 months)
2004 - 2005	**PI**, Project on "Evaluating Multisensory Cue Integration Strategies through the Overt Attentional Paradigm", **Royal Society UK** Equipment Grant (**£14,768**).
2000 - 2002	**PI**, Research Grant from the **RIKEN Brain Science Institute**, Japan for the study of 'Visual attention & motor control' on a prototype robotic vision head (**$400,000**).
Pending	**co-PI**, **Microsoft Research** Funding for collaborative research on 'Learning Robotics' (**£500,000**) pledged over a five year period – funding under negotiation.

INVITED TALKS

Apr. 2006	**Deutsches Zentrum für Luft- und Raumfahrt e.V. (DLR),** Munich, Germany (*Apr. 4)*
Feb. 2006	**Erasmus MC**, **Department of Neuroscience,** Rotterdam, Netherlands (*Feb. 6)*
Oct. 2005	**Rank Prize Funds Symposium** on Active Vision (lead paper), Cumbria, UK *(Oct. 25)*
June 2005	**Microsoft Research Lab**, Cambridge, UK *(Jun.7)*
May 2004	**HONDA Research Institute**, Frankfurt, Germany *(May.19)*
Apr. 2005	**ETH-Zurich**, **Institute of Neuroinformatics**, Switzerland *(Apr. 8)*
Sep. 2004	**SONY Computer Science Laboratories**, Paris, France *(Sep.6)*
Aug. 2004	**SONY Research Labs**, Tokyo, Japan *(Aug.5)b*
May 2004	**University of Strathclyde**, Glasgow, UK *(May. 27)*
Apr. 2004	**University of Sussex**, **Department of Informatics,** UK *(Apr. 23)*
Feb. 2004	**University of Stirling, Department of Computing Science,** Stirling, UK *(Feb. 20)*
Jul. 2003	**Swiss Federal Institute of Technology (EPFL)**, Switzerland *(Jul. 17)*
Feb. 2003	**Northwestern University, Dept. of Biomedical Engineering,** Chicago, IL, USA *(Feb. 14)*
Nov. 2002	**University of Edinburgh, Division of Informatics,** Scotland. *(Nov. 14)*
Oct. 2002	**Jet Propulsion Laboratory (JPL) Caltech, Pasadena, CA.** *(Oct. 15)*
Nov. 2001	**US/JAPAN Workshop on Exoskeleton Technologies (DARPA)**, Maui, Hawaii *(Nov.30)*
July 2001	**DARPA Exoskeletons for Human Performance Augmentation**, VA, USA *(July 30)*
Apr. 2001	**SONY Corporation, Digital Creatures Laboratory,** Tokyo, Japan *(Apr.24)*
Apr. 2001	**The Institute of Physical & Chemical Research (RIKEN),** Saitama, Japan *(Apr.23)*
Jan. 2001	**Bell Laboratories**, Holmdel, NJ, USA *(Jan.22)*
Oct. 2000	**USC Motor Control and Imitation Learning Seminar**, Los Angeles, CA, USA *(Oct.9)*
Aug. 2000	**Advanced Telecommunications Research International (ATR),** Kyoto, Japan *(Aug.17)*
June 1998	**Advanced Telecommunications Research International (ATR),** Kyoto, Japan *(June 18)*
Aug. 1997	**Isaac Newton Institute for Mathematical Studies,** Cambridge, U.K. Participant of the workshop on *Generalization in Neural Network and Machine Learning*
May 1997	**The Institute of Physical & Chemical Research (RIKEN),** Saitama, Japan *(May 12)*
Dec. 1995	**University of Melbourne,** Melbourne, Australia *(Dec. 8).*

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TEACHING

Spring 2004 ~	***Machine Learning and Sensorimotor Control (Level 11)***, School of Informatics, University of Edinburgh. (average enrolment of 25 Masters students per year)
Spring 2005~	***Intelligent Autonomous Robotics (Level 10/11)***, School of Informatics, University of Edinburgh. (average enrolment of 20 students Masters + UG4 per semester)
Spring 02/03	CS567-***Machine Learning***, Dept. of Computer Science, USC (average enrolment of 35 students per year)
Fall 2001	CS599-***Reinforcement Learning***, Dept. of Computer Science, USC. (15 students)
Fall 00/02	CS645-***Advanced Topics in Neural Computation & Statistical Learning***, Dept. of Computer Science, University of Southern California.
Spring 2002	Guest Lecture on "Neural Networks Learning" @ CS561b-***Artificial Intelligence***, University of Southern California
Fall 2001	Guest Lecture on "Reinforcement Learning and Motor Control" @ CS564-***Brain Theory and Artificial Intelligence***, University of Southern California
Fall 2001	Guest Lecturing, CS542-***Neural Computation with Artificial Neural Networks***, Dept. of Computer Science, University of Southern California.
Spring 2001	Guest Lecture on "Introduction to Learning for Movement Systems"@ CS545-***Introduction to Robotics***, University of Southern California
Fall 2000	Guest Lecture on "Learning in Robot Control" @ CS445-***Introduction to Robotics***, University of Southern California

Course Development

Summer 2004	Designed the core undergraduate second year syllabus for the Informatics degree as the **co-convener** of the **Inf2** syllabus committee. Formulated the detailed syllabus and coursework for the Inf2D
Fall 2004	Reorganized and updated the course formerly called Intelligent Sensing and Control. Currently offered as **Intelligent Autonomous Robotics** (IAR-4/5) with updated materials on probabilistic localization, advanced planning and upgraded hardware.
Fall 2003	Identified missing components in the control and statistical learning curriculum and proposed, designed and taught a new course on **Machine Learning and Sensorimotor Control** (MLSC).
Fall 2003	Conducted an evaluation on the Machine Learning component of the MSc and UG4 by organizing staff meetings and presenting the report at the BoS meeting. The machine learning core topics were redistributed among **Reinforcement Learning** (RL), **Learning from Data** (LFD) and **Probabilistic Modeling & Reasoning** (PMR) headings.

Teaching Grants

2005	**co-PI**, EPSRC Collaborative Teaching Account (CTA) for upgrade of Robotics Research Equipment for the course Intelligent Autonomous Robotics (**£14,500**)

STUDENT SUPERVISION

PhD Supervision

Aaron D'Souza (2001-2004; co-supervision @ USC): Towards parameter free statistical learning
Graham McNeill (2003-2006): Incorporating prior knowledge for Shape Analysis
Timothy Hospedales (2004-2007): Segregation and integration in multimodal perceptual inference
Narayanan Edakunni (2004-2007): Localized online learning in probabilistic framework
Giorgos Petkos (2004-2007): Learning control under varying contexts
Matthew Howard (2005-2008): Behavior generation through optimized combination of cost functions
Adrian Haith (2005-2008): Cerebellum and nonlinear sensorimotor control
Sebastien Bitzer (2006-2009): Extracting hidden latent variables for context based learning

Djordje Mitrovic (2007-2010): Stochastic optimal control and active learning in motor control
Hannes Saal (2006-2010): Machine learning for tactile sensory interpretation

PhD Supervision (second supervisor)

Jan Peters (2002-'06: USC), Toby Breckon (2003-'06), Matthew Szenher (2003-'06), Thor List (2004-'07), Rowland Sillito (2005-'08)

Masters and UG4 supervision

2005-2006: Chris Towell, Joel Cartwright, Hirotaka Hachiya, Djordje Mitrovic, Joel Horne, James Hanlon; **2004-2005:** Istvan Siklossy, Thomas Hood, Philipp Robbel, Evangelis Valtos; **2003-04:** Yariv Bachar, Alexander Arthur, Timothy Rost, Justin Rachels

PROFESSIONAL SERVICES (External)

Organizing and Program Committees

Dec. 2006	Program Committee, *IEEE-RAS International Conference on Humanoid Robots(HUMANOIDS '06),* Genoa, Italy, Dec.4-6, 2006.
Jun. 2006	Program Committee, *International Conference on Machine Learning (ICML 2006)*, Pittsburg, PA, USA, Jun. 25-29, 2006.
Jan. 2006	Technical Program Committee, *The Second International Workshop on Biologically Inspired Approaches to Advanced Information Technology(BIO-ADIT)*, Osaka, Japan , Jan. 26-27, 2006.
Jul. 2004	Organizer and Program Committee, *International Conference on Simulated and Adaptive Behavior (SAB'04)*, Los Angeles, CA, USA, Jul. 13-17, 2004.
Aug. 2002	Program Committee, *International Conference on Artificial Neural Networks* (*ICANN'02)*, Madrid, Spain, August 2002.
Jul. 2002	Program Committee, *International Conference on Machine Learning (ICML 2002)*, Sydney, Australia, Jul. 8-12, 2002
Oct. 2001	Session Chair (Learning in Robots IV), *IEEE/RSJ International Conference on Intelligent Robots and Systems* (*IROS'01)*, Maui, Hawaii,Oct.29-Nov.3, 2001.
Aug. 2001	Program Committee, *International Conference on Artificial Neural Networks* (*ICANN'01)*, Vienna, Austria, Aug. 21-25, 2001.
Dec. 2000	Organizer, "Real Time Modeling for Complex Learning Tasks", *Workshop at the conference on Neural Information Processing Systems 13 (NIPS)*, Breckenridge, Colorado, Dec.2, 2000.
Jun. 1999	Session Chair, *International Conference on Soft Computing (SOCO'99),* Genoa, Italy.
Dec. 1991	Organizer, Workshop on "Fuzzy Logic & Applications to Self Learning Rule base" as part of a Departmental Lecture Program at RECT, India.

Appointments

1995-96	Chairman, IEEE Student Branch, Tokyo Institute of Technology (Awarded IEEE Regional Activities Board (RAB) award for services rendered)
1994-95	Founder Member and Vice-chair, IEEE Student Branch, Tokyo Institute of Technology.
1994-96	President, Indian Students and Professional Association (ISPA), Tokyo, Japan.
1990-91	Chairman, IEEE Student Branch, Regional Engineering College, Trichy, India.

Reviewing

- IEEE Transactions on Neural Networks, IEEE Transactions on Signal Processing, IEEE Transactions on Systems, Man and Cybernetics**,** IEEE Transactions on Robotics and Automation**,** IEEE Transactions on Pattern Analysis and Machine Intelligence (PAMI), Journal of Machine Learning Research (JMLR), Neural Processing Letters**,** SIAM Journal on Optimization, International Journal of Robotics and Automatics, Autonomous Robots

- International Conference on Machine Learning (ICML), International Conference on Robotics and Automation (ICRA), International Conference on Artificial Intelligence (AAAI), International Conference on Neural Information Processing (ICONIP), International Conference on Soft Computing (SOCO), IEEE Intl. Conf. on Computational Intelligence and Robotics (CIRA), International Conference on Artificial Neural Networks (ICANN), American Control Conference (ACC-ASME), International Conference on Humanoid Robots
- **Editorial board:** HFSP Journal

External Examiner (PhD)

Oct 2006	Yan Sze Hon, Faculty of Information Tech., Malaysia Multimedia University, Malaysia
Dec 2005	Sheng Li, Department of Informatics, University of Sussex, UK.

PROFESSIONAL and ADMINISTRATIVE SERVICES (Internal)

Internal Examiner (PhD)

Aug. 2006	Chalita Hiransoog, School of Informatics, University of Edinburgh, UK. (MPhil)
Jul. 2006	Mykel Kochenderfer, School of Informatics, University of Edinburgh, UK.
Mar. 2006	Paul Crook, School of Informatics, University of Edinburgh, UK.

School

2004-2005	Served on a Machine Learning Lectureship and Neuroinformatics (DTC) Readership **recruitment panel** from the stage of short listing to interviews
2003-2006	Served on the Neuroinformatics Doctoral Training Center 4-year combined MSc/PhD **interview panel** to select students for the year 2004-05, 2005-06 and 2006-07.
2004-2005	**Co-convener** of the Informatics 2 Syllabus committee.
2004-2005	**Colloquium coordinator** for the School of Informatics
2004	Designed and equipped a **visual psychophysics lab** with the first non-head mounted real-time gaze tracker system in Edinburgh with the facility of large screen projection and robotic pan-tilt image processing and tracking module.

College and University

2004-2005	Served on the College Masters **Scholarship Committee.**
2004-2006	**Director of Studies** (DoS) for 15 first and second year undergraduate students

PUBLICATIONS

Note: My most significant publications are indicated by ***

Books and Book Chapters

[1] **Sethu Vijayakumar**, Aaron D'Souza and Stefan Schaal. Approximate nearest neighbor regression in very high dimensions, in (eds.) Shakhnarovich, Darrell and Indyk, *Nearest Neighbor Methods in Learning and Vision*, MIT Press, Cambridge, MA, pp. 103-142 (2006).

[2] (Eds.) Stefan Schaal, Auke Ijspeert, Aude Billard, **Sethu Vijayakumar**, John Hallam and Jean-Arcady Meyer, *From Animals to Animats 8*, MIT Press (2004).

Refereed Journals

[3] *** **Sethu Vijayakumar**, Aaron D'Souza & Stefan Schaal, Incremental Online Learning in High Dimensions, *Neural Computation*, Vol. 17, No. 12 (2005).

[4] *** **Sethu Vijayakumar**, Aaron D'Souza, Tomohiro Shibata, Jorg Conradt & Stefan Schaal, Statistical Learning for Humanoid Robots, *Autonomous Robots*, Vol. 12, No. 1, pp. 55-69 (2002).
[5] Tomohiro Shibata, **Sethu Vijayakumar**, Jorg Conradt and Stefan Schaal, Biomimetic Oculomotor Control, *Adaptive Behavior*, Vol. 9 ,No.3-4, pp. 189-208 (2001).
[6] Stefan Schaal, Chris Atkeson & **Sethu Vijayakumar**, Scalable Locally Weighted Statistical Techniques for Real Time Robot Learning, *Applied Intelligence,* Elsevier Science, Vol.16, No.1 (2002).
[7] Stefan Schaal, **Sethu Vijayakumar** & Aaron D'Souza, Online Statistical Robot Learning, *Journal of the Robotic Society of Japan*, Vol. 19, No. 5, pp. 561-568 (2001).
[8] Chris Atkeson, Josh Hale, Mitsuo Kawato, Shinya Kotosaka, Frank Pollick, Marcia Riley, Stefan Schaal, Tomohiro Shibata, Gaurav Tevatia, Ales Ude & **Sethu Vijayakumar**, Using humanoid Robots to Study Human Behavior, *IEEE Intelligent Systems*, vol.15:4, pp.46-56, IEEE Computer Society (2000).
[9] *** **Sethu Vijayakumar** & Hidemitsu Ogawa, RKHS based functional analysis for exact incremental learning, *Neurocomputing*, Vol.29, No.1-3, pp.85-113, Elsevier Science (1999). ***
[10] **Sethu Vijayakumar** & Hidemitsu Ogawa, Improving generalization ability through active learning, *Transactions of the IEICE Japan, Vol.E82*-D, No.2, pp. 480-487 (1999).
[11] **Sethu Vijayakumar**, Masashi Sugiyama & Hidemitsu Ogawa, Training data selection for optimal generalization with noise variance reduction in neural networks, In Marinaro & Tagliaferri (ed.), *Neural Nets WIRN Vietri-98,* pp.153-166, Springer-Verlag (1998).
[12] *** **Sethu Vijayakumar**, Stefan Schaal & Chris Atkeson, Local dimensionality reduction, in: M.I.Jordan, M.J.Kearns and S.A.Solla (ed.), *Advances in Neural Information Processing Systems 10,* pp.633-639, MIT Press (1998).
[13] **Sethu Vijayakumar** & Stefan Schaal, Local Adaptive Subspace Regression, *Neural Processing Letters*, Vol.7, No.3, pp.139-149, Kluwer Publishers (1998).
[14] **Sethu Vijayakumar** & Hidemitsu Ogawa, A functional analytic approach to incremental learning in optimally generalizing neural networks, In: M.Palaniswamy et al. (ed.): *Computational Intelligence: A Dynamic Systems Perspective.* pp.777-782 IEEE Press (1995).

Refereed Conference Papers with Proceedings

[15] Narayanan Edakunni, Stefan Schaal and **Sethu Vijayakumar,** Kernel Carpentry for Online Regression using Randomly Varying Coefficient Model, *Proc. International Joint Conference on Artificial Intelligence (IJCAI '07),* Hyderabad, India (2007).
[16] ***Timothy Hospedales and **Sethu Vijayakumar**, Structure Inference for Bayesian Multisensory Perception and Tracking, *Proc. International Joint Conference on Artificial Intelligence (IJCAI '07),* Hyderabad, India (2007).
[17] ***Graham McNeill and **Sethu Vijayakumar**, Part-based Probabilistic Point Matching Using Equivalence Constraints, *Proc. Advances in Neural Information Processing Systems (NIPS '06),* Vancouver, Canada (2006).
[18] Matthew Howard , Michael Gienger, Christian Goerick and **Sethu Vijayakumar**, Learning Utility Surfaces for Movement Selection, *Proc. IEEE International Conference on Robotics and Biomimetics (ROBIO)*, Kunmin, China (2006).
[19] Masashi Sugiyama, Hirotaka Hachiya, Christopher Towell and **Sethu Vijayakumar**, Geodesic Gaussian kernels for value function approximation, *Proc. 2006 Workshop on Information-Based Induction Sciences (IBIS),* Osaka, Japan (2006)
[20] Graham McNeill and **Sethu Vijayakumar**, Part-based Probabilistic Point Matching, *Proc. International Conference on Pattern Recognition (ICPR),* Hong Kong (2006).
[21] Graham McNeill and **Sethu Vijayakumar**, A Probabilistic Approach To Robust Shape Matching, *Proc. International Conference on Image Processing (ICIP '06),* Atlanta, GA (2006).
[22] Georgios Petkos, Marc Toussaint and **Sethu Vijayakumar**, Learning Multiple Models of Non-Linear Dynamics for Control under Varying Contexts, *Proc. International Conference on Artificial Neural Networks (ICANN '06)*, Athens, Greece (2006).
[23] Graham McNeill and **Sethu Vijayakumar**, Hierarchical Procrustes Matching for Shape Retrieval, *IEEE Conference on Computer Vision and Pattern Recognition (CVPR '06),* New York (2006).

[24] *** Jan Peters, **Sethu Vijayakumar**, Stefan Schaal, Natural Actor-Critic, *(in) Proc. of the 16th European Conference on Machine Learning (ECML 2005),* Porto, Portugal, Oct.3 -7, (2005).

[25] *** Marc Toussaint and **Sethu Vijayakumar**, Learning Discontinuities with Product-of-Sigmoids for Switching between Local Models, *22nd. International Conference on Machine Learning (ICML'05),* Bonn, Germany, Aug 7-11 (2005).

[26] Graham McNeill and **Sethu Vijayakumar**, 2D Shape Classification and Retrieval, *19th. International Joint Conference on Artificial Intelligence (IJCAI '05),* Edinburgh, UK (2005).

[27] Marc Toussaint and **Sethu Vijayakumar**, Learning Discontinuities for Switching between Local Models, *19th. International Joint Conference on Artificial Intelligence (IJCAI '05),* Edinburgh, UK (2005).

[28] *** Aaron D'Souza, **Sethu Vijayakumar** and Stefan Schaal, Bayesian Backfitting Relevance Vector Machine, *Proc. 21st International Conference on Machine Learning,* Banff, Canada (2004).

[29] Jan Peters, **Sethu Vijayakumar,** and Stefan Schaal, Learning Motor Primitives with Reinforcement Learning, *Proceedings of 11th Joint Symposium on Neural Computation* (2004).

[30] Jan Peters, **Sethu Vijayakumar**, and Stefan Schaal, Reinforcement Learning for Humanoid Robots, *Proc. Third IEEE-RAS International Conference on Humanoid Robots*, Karlsruhe, Germany (2003).

[31] Aaron D'Souza, **Sethu Vijayakumar** and Stefan Schaal, Bayesian Backfitting for High Dimensional Regression, *Proc. 10th Joint Symposium on Neural Computation*, UC Irvine, May 17 (2003).

[32] Jan Peters, **Sethu Vijayakumar**, Stefan Schaal, Natural Actor-Critic, *(in) Advances in Neural Information Processing Systems 16 Workshop ''Planning for the Real World: The promises and challenges of dealing with uncertainty''* (2003).

[33] Jan Peters, **Sethu Vijayakumar**, and Stefan Schaal, Scaling Reinforcement Learning Paradigms for Motor Control, *Proc. 10th Joint Symposium on Neural Computation*, UC Irvine, May 17 (2003).

[34] **Sethu Vijayakumar**, Aaron D'Souza, Jan Peters, Jorg Conradt, Tomasz Rutkowski, Auke Ijspeert, Jun Nakanishi, Masato Inoue, Tom Shibata, Arleen Wiryo, Laurent Itti, Shun-ichi Amari and Stefan Schaal, Real-Time Statistical Learning for Oculomotor Control and Visuomotor Coordination, *Proc. Neural Information Processing Systems (NIPS 15)*, Demonstration Track (2002).

[35] *** **Sethu Vijayakumar**, Jorg Conradt, Tomohiro Shibata & Stefan Schaal, Overt Visual Attention for a Humanoid Robot, *Proc. International Conference on Intelligence in Robotics and Autonomous Systems (IROS 2001)*, Hawaii, pp. 2332-2337 (2001).

[36] Aaron D'Souza**, Sethu Vijayakumar** & Stefan Schaal, Learning Inverse Kinematics, *Proc. International Conference on Intelligence in Robotics and Autonomous Systems (IROS 2001)*, Hawaii, pp. 298-303 (2001).

[37] Tomohiro Shibata, **Sethu Vijayakumar**, Jorg Conradt and Stefan Schaal, Humanoid Oculomotor Control Based on Concepts of Computational Neuroscience, *Proc. Humanoids2001, Second IEEE-RAS Intl. Conf. on Humanoid Robots,* Waseda Univ., Japan, pp. 278-285 (2001).

[38] Stefan Schaal, **Sethu Vijayakumar**, Aaron D'Souza, Auke Ijspeert and Jun Nakanishi, Real-time statistical learning for robotics and human augmentation, *Proc. Tenth International Symposium on Robotics Research (ISRR)*, Victoria, Australia, pp.117-124 (2001).

[39] **Sethu Vijayakumar** & Stefan Schaal, Real Time Learning in Humanoids: A challenge for scalability of Online Algorithms, *Humanoids2000, First IEEE-RAS Intl. Conf. on Humanoid Robots* MIT, Cambridge, MA, USA (2000).

[40] *** **Sethu Vijayakumar** & Stefan Schaal, LWPR: An O(n) Algorithm for Incremental Real Time Learning in High Dimensional Space, *Proc. International Conference on Machine Learning (ICML2000),* Stanford, CA pp.1079-1086 (2000).

[41] Jorg Conradt, Gaurav Tevatia, **Sethu Vijayakumar** & Stefan Schaal, Online Learning for Humanoid Robot Systems, *Proc. International Conference on Machine Learning (ICML2000)*, CA pp.191-198 (2000).

[42] Stefan Schaal, Chris Atkeson & **Sethu Vijayakumar**, Real Time Robot Learning with Locally Weighted Statistical Learning, *Proc. International Conference on Robotics and Automation (ICRA2000),* vol.1, San Francisco, CA, pp.228-293 (2000). [***Paper selected as Best 5 of 600 at the conference***.]

[43] **Sethu Vijayakumar** & Stefan Schaal, Fast and Efficient Incremental Learning for High-Dimensional Movement Systems, *Proc. International Conference on Robotics and Automation (ICRA2000),* vol.2, San Francisco, CA,pp.1894-1899 (2000).

[44] **Sethu Vijayakumar** & Si Wu, A gradient based technique for generating sparse representation in function approximation, *Proc. International Conference on Neural Information Processing (ICONIP'99),* Perth, Australia, pp.314-319 (1999).

[45] **Sethu Vijayakumar** & Si Wu, Sequential Support Vector Classifiers and Regression, *Proc. International Conference on Soft Computing (SOCO'99),* Genoa, Italy, pp. 610-619 (1999).

[46] **Sethu Vijayakumar** & Stefan Schaal, Robust local learning in high dimensional spaces, *Proc. 5th Joint Symposium on Neural Computation, San Diego* (1998).

[47] **Sethu Vijayakumar**, Stefan Schaal & Chris Atkeson, Local Dimensionality Reduction, *Advances in Neural Information Processing Systems 10,* Denver, Colorado (1997).

[48] **Sethu Vijayakumar** & Stefan Schaal, Local Dimensionality Reduction for Locally Weighted Learning, *Proc. IEEE Intl. Symposium on Computational Intelligence in Robotics and Automation (CIRA97),* Monterey, CA, USA, pp.220-225 (1997).

[49] ***** Sethu Vijayakumar** & Hidemitsu Ogawa, A Functional Analytic Approach To Incremental Learning in Optimally Generalizing Neural Networks, *Proceedings of the International Conf. on Neural Networks (ICNN'95),* Perth, Australia. [***Paper awarded Best Student Paper of the conference***]

[50] **Sethu Vijayakumar** & Hidemitsu Ogawa, Incremental Learning With Optimal Generalizing Ability In Neural Networks, *TR Institute of Electrical, Information and Communication Engineers,* NC 95, pp. 65-72 (1995).

[51] **Sethu Vijayakumar** & Hidemitsu Ogawa, Incremental Learning in Optimally Generalizing Neural Networks, *All Japan Institute of Electrical, Information and Communication Engineers (IEICE) paper contest*, No.D-27, p27 (1996).

[52] **Sethu Vijayakumar**, Self Learning Rule Base using Fuzzy Logic*, Proc. of TECHNOKREC '92, The Institution of Engineers (IE), All India Symposium*, Surathkal, India (1992).

Non-refereed Publications/Thesis/ Others

[53] Aaron D'Souza, **Sethu Vijayakumar** and Stefan Schaal. Are Internal Models of the Entire Body Learnable? *In Society for Neuroscience Abstracts.* Vol. 27, Program No. 406.2, 2001.

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