

Kalyana C. Veluvolu, PhD, SMIEEE

CONTACT INFORMATION	Associate Professor #IT1-817 College of IT Engineering Kyungpook National University Buk-gu, Daegu, South Korea 702-701	<i>Voice:</i> +82(0)53-9507232(Office) +82(0)10-92869406 (Mobile) <i>Fax:</i> +82(0)53-9505505 <i>E-mail:</i> veluvolu@ee.knu.ac.kr <i>WWW:</i> http://ncbs.knu.ac.kr
EXPERIENCE	<i>Associate Professor</i> College of IT Engineering, Kyungpook National University, South Korea	2013.04 - present
	<i>Visiting Professor</i> School of MAE, Nanyang Technological University, Singapore	2016.04 - 2017.02
	<i>Visiting Professor</i> University of Newcastle, UK	2017.01 - 2017.02
	<i>Visiting Professor</i> LAMIH, University of Valenciennes, France	2016.08 - 2016.09
	<i>Director, NCBS Lab</i> College of IT Engineering, Kyungpook National University, South Korea	2010.03 - present
	<i>Assistant Professor</i> College of IT Engineering, Kyungpook National University, South Korea	2009.03 - 2013.03
	<i>Visiting Professor</i> LAMIH, University of Valenciennes, France	2012.05 - 2012.06
	<i>Visiting Professor</i> School of EEE, Nanyang Technological University, Singapore	2010.06 - 2010.07
	<i>Post-Doctoral Research Fellow</i> Robotics Research Center, Nanyang Technological University, Singapore	2006.12 - 2009.01
	<i>Graduate Researcher (PhD Study)</i> School of EEE, Nanyang Technological University, Singapore	2002.07 - 2006.12
EDUCATION	Nanyang Technological University, Singapore <i>Doctor of Philosophy</i> (Electrical and Electronics Engineering)	2002.07 - 2006.12
	Acharya Nagarjuna University, India <i>Bachelor of Technology</i> (Electrical and Electronics Engineering)	1998.06 - 2002.05
RESEARCH INTERESTS	My laboratory (NCBS Lab) focuses on three major enabling areas/technologies: (1) <i>Robotics</i> : The primary focus is on developing machine learning techniques for medical robotics with applications to microsurgery, brain surgery and wearable	

sensors. Current projects include sensing and robotic compensation for micro surgery, navigation for brain surgery and radiotherapy, wearable sensors for health monitoring and motion sensing for gaming applications.

- (2) Systems & Control: Focus of research is on nonlinear modelling, estimation and control of systems with applications to robotics, autonomous systems, electric vehicles and industrial drives. Current focus is on development of sliding mode based approaches for fault diagnosis and prognosis of autonomous systems/vehicles.
- (3) Neural Decoding: By developing new approaches for understanding brain mechanisms that underlie changes in brain excitability, it is hoped that new techniques/treatment protocols can be established. Using multi-sensor (EEG, EMG, IMU) configurations and brain-computer interface applications, we aim to develop biomedical systems for clinical assessment for studying normal and abnormal brain functions with applications to neural disorders like autism, ADHD and stroke patients rehabilitation.

SPECIAL TRAINING
& COURSES

- Human Physiology 2003
Singapore General Hospital & NTU, Singapore
- Mammalian Cell Culture 2003
Singapore- Massachusetts Institute of Technology (SMA Program), National University of Singapore, Singapore

RESEARCH
FUNDING

1. *Title*: Brain Network Mapping for ADHD Children
Funding Agency: National Research Foundation (NRF), KOREA
Role: PI
Effective Dates: 2017 - 2020
Total Award: 480,000 USD (approx.)
2. *Title*: Smart Hand-held Robotics Instrument for Microsurgery
Funding Agency: National Research Foundation (NRF), KOREA
Role: PI
Effective Dates: 2014 - 2017
Total Award: 125,000 USD (approx.)
3. *Title*: Brain Korea 21 Plus
Funding Agency: National Research Foundation (NRF), KOREA
Role: Co-PI
Effective Dates: 2013 - 2020
Total Award (Estimated share): 400,000 USD (approx.)
4. *Title*: Robust Observers for Vehicle Applications
Funding Agency: KNU Bokyeon Research Fund
Role: PI
Effective Dates: 2015.12 - 2016.12
Total Award: 15,000 USD (approx.)
5. *Title*: Brain Functional Network Mapping for Emotions
Funding Agency: KNU Research Fund
Role: PI
Effective Dates: 2016.3 - 2017.2
Total Award: 20,000 USD (approx.)

6. *Title:* Tremor Sensing and Compensation Technology for Surgical Robotics Applications
Funding Agency: National Research Foundation (NRF), KOREA
Role: PI
Effective Dates: 2011 - 2014
Total Award: 180,000 USD (approx.)
7. *Title:* Brain Korea 21
Funding Agency: National Research Foundation (NRF), KOREA
Role: Co-PI
Effective Dates: 2010 - 2013
Total Award (Share): 100,000 USD (approx.)
8. *Title:* U-health Care Group Research Fund
Funding Agency: National Research Foundation (NRF), KOREA
Role: Collaborator
Effective Dates: 2010 - 2013
Total Award (Share): 60,000 USD (approx.)
9. *Title:* Tremor Filtering for Surgical Robotics Applications
Funding Agency: Ministry of Education, Science & Technology (MEST) and NRF, KOREA
Role: PI
Effective Dates: 2010 - 2011
Total Award: 50,000 USD (approx.)
10. *Title:* Fault Reconstruction and Estimation in Electric Vehicles
Funding Agency: DGIST Grant
Role: Collaborator
Effective Dates: 2011 - 2012
Total Award: 30,000 USD (approx.)
11. *Title:* Real-time Time-frequency decomposition of EEG rhythms for Brain Computer interface (BCI) Applications
Funding Agency: KNU Global 100
Role: PI
Effective Dates: 2011 - 2012
Total Award: 10,000 USD (approx.)
12. *Title:* Fault-detection and Isolation with Sliding Mode Observers
Funding Agency: KNU Global 100 Grant
Role: PI
Effective Dates: 2009 - 2010
Total Award: 10,000 USD (approx.)
13. *Title:* Robust sliding mode observers for state and unknown input estimations
Funding Agency: Kyungpook National University (KNU) Grant
Role: PI
Effective Dates: 2009 - 2010
Total Award: 9,000 USD (approx.)

**Publications
(Listed
Chronologically)**

Journals : 50 (published/accepted);
: 5 (revised/submitted);
Patents: 1
Main author papers (first or corresponding author): 42/50

25% (Q1) IF Journals: 32/50
Total Impact Factor : 150 (50 Journals)
h-index: 18 (Web of Science); 20 (Google Scholar)

a) Patents

1. K. C. Veluvolu, Y. Wang, and J. Y. Lee, *Physiological Tremor Position Estimation with Accelerometers for Real-time Applications*, Korea Patent No: 10-1318397-00-00, Date: 2013-10-16.

b) Refereed Journals ¹ (published/accepted)

2. K. C. Veluvolu, Y. C. Soh* and W. Cao, "Robust Discrete-time Nonlinear Sliding Mode State Estimation for a Class of Uncertain Nonlinear Systems", *International Journal of Robust and Nonlinear Control*, vol. 17, no. 9, pp. 803 - 828, 2007.
[Impact Factor: 3.176; Journal Rank: 1/257]
3. K. C. Veluvolu, Y. C. Soh* and W. Cao, "Robust Observer with Sliding Mode Estimation for Nonlinear Uncertain Systems", *IET Control Theory and Applications*, vol. 1, no. 5, pp. 1533 - 1540, 2007.
[Impact Factor: 2.048; Journal Rank: 12/56]
4. U. X. Tan, K. C. Veluvolu, W. T. Latt, C. Y. Shee and W. T. Ang*, "Estimating Displacement of Periodic Motion using Accelerometers", *IEEE Sensors Journal*, Vol. 8, no. 8, pp. 1385-1388, 2008.
[Impact Factor: 1.762]
5. K. C. Veluvolu* and Y. C. Soh "Discrete-time Multiple Sliding Mode State and Unknown Input Estimations for Nonlinear Systems", *IEEE Transactions on Industrial Electronics*, Vol. 56, no. 9, pp. 3443 - 3452, 2009.
[Impact Factor: 6.498; Journal Rank: 1/58]
6. K. C. Veluvolu* and Y. C. Soh, "High Gain Observer with Sliding Mode for State and Unknown Input Estimations", *IEEE Transactions on Industrial Electronics*, Vol. 56, no. 9, pp. 3386 - 3393, 2009.
[Impact Factor: 6.498; Journal Rank: 1/58]
7. K. C. Veluvolu*, W. T. Latt, and W. T. Ang, "Double Adaptive Bandlimited Multiple Fourier Linear Combiner for Real-time Estimation/Filtering of Tremor", *Biomedical Signal Processing and Control*, Vol. 5, no. 1, pp 37-44, 2010.
[Impact Factor: 1.419]
8. K. C. Veluvolu* and W. T. Ang, "Estimation and Filtering of Physiological Tremor for Surgical Robotics Applications", *International Journal of Medical Robotics and Computer Assisted Surgery*, Vol. 6, no. 3, pp. 334- 342, 2010.
[Impact Factor: 1.526]
9. K. C. Veluvolu* and D. Lee, "Sliding Mode High-Gain Observers for a Class of Uncertain Nonlinear Systems", *Applied Mathematics Letters*, Vol. 24, no. 3, pp. 329- 334, 2011.
[Impact Factor: 1.337; Journal Rank: 51/257]

¹* indicates corresponding author

10. K. C. Veluvolu* and W. T. Ang, “Physiological Tremor Estimation from Accelerometers for Real-Time Applications”, *Sensors*, Vol. 11, no. 3, pp. 3020-3036, 2011. .
[Impact Factor: 2.245; Journal Rank: 10/56]
11. K. C. Veluvolu* and Y. C. Soh, “Multiple Sliding Mode Observer and Unknown Input Estimations for Lipschitz Nonlinear Systems”, *International Journal of Robust and Nonlinear Control*, Vol. 21, no. 11, pp. 1322-1340, 2011.
[Impact Factor: 3.176; Journal Rank: 1/257]
12. K. C. Veluvolu*, M. Y. Kim and D. Lee, “Nonlinear Sliding Mode High-Gain Observers for Fault Diagnosis and Estimation”, *International Journal of Systems Science*, Vol. 42, no. 7, pp. pp. 1065 - 1074, 2011.
[Impact Factor: 2.10; Journal Rank: 13/102]
13. W.T. Latt, K. C. Veluvolu* and W. T. Ang, “Drift free position estimation of Periodic Motion using Inertial Sensors”, *Sensors*, Vol. 11, no. 6, pp. 5931-5951, 2011.
[Impact Factor: 2.245; Journal Rank: 10/56]
14. K. C. Veluvolu* and Y. C. Soh, “Fault Reconstruction and State Estimation with Sliding Mode Observers for Lipchitz Nonlinear Systems”, *IET Control Theory and Applications*, Vol. 5, no. 11, pp. 1255-1263, 2011.
[Impact Factor: 2.048; Journal Rank: 12/56]
15. M. Y. Kim, K. C. Veluvolu and S. Lee, “Lateral Scanning Linnik interferometry for large field of view and fast scanning: water bump inspection”, *International Journal of Optomechatronics*, Vol. 5, No. 4, 2011.
[Impact Factor: 0.65]
16. K. C. Veluvolu*, Y. Wang and S. Kavuri, “Adaptive Estimation of EEG Rhythms for Optimal band Estimation in BCI”, *Journal of Neuroscience Methods*, Vol. 203, no.1, pp. 163-172, 2012.
[Impact Factor: 2.025]
17. Y. Wang, K. C. Veluvolu*, M. Defoort and J. H. Cho, “Adaptive Estimation of EEG mu- Rhythm for Improved ERD detection”, *Neuroscience Letters*, Vol. 528, No. 2, pp. 137-142, 2012.
[Impact Factor: 2.030]
18. S. Tatinati, K. C. Veluvolu*, S.-M. Hong, W. T. Latt and W. T. Ang, “Real-time Tremor Modeling with Auto-regressive model and Kalman Filter for Surgical Robotics Applications”, *IEEE Sensors Journal*, Vol. 13, No. 12, pp. 4977-4985, 2013.
[Impact Factor: 1.762]
19. K. C. Veluvolu*, S. Tatinati, S. M. Hong and W. T. Ang, “Multi-step ahead Prediction of Physiological Tremor for Real-time Cancellation in Robotic Devices”, *IEEE Transactions on Biomedical Engineering*, Vol. 60, No. 11, pp. 3074 - 3082, 2013.
[Impact Factor: 2.347]
20. Y. Wang, K. C. Veluvolu*, and Minhoo Lee, “Time-Frequency Analysis of Bandlimited Signals with BMFLC and Kalman Smoother/Filter for BCI Applications”, *Journal of NeuroEngineering and Rehabilitation*, 10:109, 2013.
[Impact Factor: 2.740; Journal Rank: 6/64]

21. K. C. Veluvolu*, M. Defoort and Y. C. Soh, “Nonlinear Fault Reconstruction and State Estimation using High-Gain Observers with Sliding Mode”, *Journal of The Franklin Institute*, Vol. 351, No. 4, pp 1995 - 2014, 2014.
[Impact Factor: 2.395; Journal Rank: 9/85]
22. J. J. Rath, K. C. Veluvolu*, M. Defoort and Y. C. Soh, “Higher-order sliding mode observer for estimation of tyre friction in ground vehicles”, *IET Control Theory and Applications*, Vol. 8, No. 4, pp 399 - 408, 2014.
[Impact Factor: 2.048; Journal Rank: 12/56]
23. S. K. Kommuri, K. C. Veluvolu*, M. Defoort, Y. C. Soh, “Higher-order Sliding Mode Observer for Speed and Position Estimation in PMSM”, *Mathematical Problems in Engineering*, Vol. 2014, Article ID 589109, 12 pages, 2014.
[Impact Factor: 0.644]
24. G. Shafiq, K. C. Veluvolu*, “ Surface Chest Motion Decomposition for Cardiovascular Monitoring”, *Nature Scientific Reports*, 4, 5093; DOI: 10.1038/s-rep05093, 2014.
[Impact Factor: 5.578; Journal Rank: 5/57]
25. J. V. Gorp, M. Defoort, K. C. Veluvolu* and M.Djemai, “Hybrid observer for switched linear systems with unknown inputs”, *Journal of The Franklin Institute*, Vol. 351, No. 7, pp. 3987 - 4008, 2014.
[Impact Factor: 2.395; Journal Rank: 9/85]
26. M. Defoort*, and K. C. Veluvolu, “A motion planning framework with connectivity management for multiple cooperative robots”, *Journal of Intelligent & Robotic Systems*, Vol. 75, No. 2, pp. 343–357 2014.
[Impact Factor: 1.178]
27. D. Kim, D. Lee and K. C. Veluvolu, “Accommodation of Actuator Fault Using Local Diagnosis and IMC-PID”, *International Journal of Control Automation and Systems*, Vol. 12, No.6, pp. 1139–1149, 2014.
[Impact Factor: 0.954]
28. S. Tatinati, K. C. Veluvolu* and W. T. Ang, “Multi-step Prediction of Physiological Tremor based on Support Vector Machines for Robotics Assisted Microsurgery”, *IEEE Transactions on Cybernetics*, Vol. 45, No.2, pp. 328-339, 2015.
[Impact Factor: 3.469; Journal Rank: 2/24]
29. V. Gonuguntla, R. Mallipeddi, K. C. Veluvolu, “Differential Evolution with Population and Strategy Parameter Adaptation”, *Mathematical Problems in Engineering*, Vol. 2015, Article ID 287607, 10 pages, 2015.
[Impact Factor: 0.644]
30. S. K. Kommuri, J. J. Rath, K. C. Veluvolu*, M. Defoort, Y. C. Soh “Decoupled Control and Sensor FTC with Higher-order Sliding Mode for Induction Motor”, *IET Control Theory and Applications*, Vol. 9, No. 4, pp. 608 - 617, 2015.
[Impact Factor: 2.048; Journal Rank: 12/56]
31. J. J. Rath, K. C. Veluvolu* and M. Defoort, “Active Control of Nonlinear Suspension System Using Modified Adaptive Supertwisting Controller”, *Discrete Dynamics in Nature and Society*, Vol. 2015, Article ID 408623, 10 pages, 2015.
[Impact Factor: 0.877]

32. M. Defoort*, A. Polyakov, G. Demesurea, M. Djemai, K. C. Veluvolu “Leader-follower fixed-time consensus for multiagent systems with unknown nonlinear inherent dynamics”, *IET Control Theory and Applications*, Vol. 9, No. 14, pp. 2165-2170, 2015.
[Impact Factor: 2.048; Journal Rank: 12/56]
33. M. Hamadache, D. Lee*, and K. C. Veluvolu, “Rotor speed-based bearing fault diagnosis (RSB-BFD) under variable speed and constant load”, *IEEE Transactions on Industrial Electronics*, Vol. 62, No. 10, pp. 6486–6496, 2015.
[Impact Factor: 3.176; Journal Rank: 1/257]
34. J. V. Gorp, M. Defoort*, K. C. Veluvolu and M. Djemai, “Fault detection based on higher order sliding mode observer for a class of switched linear systems”, *IET Control Theory and Applications*, Vol. 9, No. 15, pp. 2249-2256, 2015.
[Impact Factor: 2.048; Journal Rank: 12/56]
35. J. J. Rath, K. C. Veluvolu* and M. Defoort, “Simultaneous Estimation of Road Profile and Tyre Road Friction for Automotive Vehicle”, *IEEE Transactions on Vehicular Technology*, Vol. 64, No. 10, pp. 4461 4471, 2015.
[Impact Factor: 1.978; Journal Rank: 15/77]
36. U. Park, J. S. Kang, V. Gonuguntla, K. C. Veluvolu and M. Lee*, “Human Implicit Intent Recognition Based on Phase Synchrony of EEG Signals”, *Pattern Recognition Letters*, Vol. 66, pp. 144-152, November 2015.
[Impact Factor:1.551]
37. M. Defoort, J. J. Rath, K. C. Veluvolu* and M. Djemai, “ Adaptive sensor and actuator fault estimation for a class of uncertain Lipschitz nonlinear systems”, *International Journal of Adaptive Control and Signal Processing* , Vol. 30, No. 2, pp. 271 - 283, 2016.
[Impact Factor: 1.346]
38. S. Tatinati, K. Nazarpour, W. T. Ang, K. C. Veluvolu*, “Ensemble Learning for multi-step prediction of respiratory motion for radiotherapy”, *Medical Engineering and Physics*, Vol. 38, No.8, pp. 749–757, 2016.
[Impact Factor: 1.825]
39. V. Gonuguntla, Y. Wang, K. C. Veluvolu*, *Phase Synchrony in Subject-specific reactive band of EEG for Classification of Motor Imagery Tasks*, *IEEE Journal of Special Topics in Signal Processing*, Vol.10, No.7, pp. 1284–1294, 2016.
[Impact Factor: 2.373; Journal Rank: 42/249]
40. J. J. Rath, M. Defoort, and K. C. Veluvolu* “Rollover index estimation in the presence of sensor faults, unknown inputs and uncertainties”, *IEEE Transactions on Intelligent Transportation Systems*, Vol. 17, No. 10, pp. 2949 –2959 2016.
[Impact Factor: 2.377; Journal Rank: 13/125]
41. K. Adhikari, R. Tatinati, W. T. Ang, K. C. Veluvolu, K. Nazarpour*, “ A Quaternion Weighted Fourier Linear Combiner for Modeling Physiological Tremors”, *IEEE Transactions on Biomedical Engineering*, Vol. 63, No.11, pp. 2336 - 2346, 2016.
[Impact Factor: 2.347]
42. G. Shafiq, R. Tatinati, W. T. Ang, K. C. Veluvolu*, Autonomous Identification of Seismocardiogram for Systolic Time Interval Estimation, *Nature Sci-*

entific Reports, Vol. 2016, No. 37524, Nov 2016.

[Impact Factor: 5.578; Journal Rank: 5/57]

43. S. Kommuri, M. Defoort, H. Karimi, K. C. Veluvolu*, "A Robust Observer-based Fault Tolerant Control For Electric Vehicles", *IEEE Transactions on Industrial Electronics*, Vol. 63, No. 12, 7671-7681, 2016.
[Impact Factor: 7.168; Journal Rank: 1/58]
44. S. Tatinati, K. Nazarpour, W. T. Ang and K. C. Veluvolu*, "Multi-dimensional Physiological Tremor Modeling for Active Compensation in Hand-held Surgical Robotics", *IEEE Transactions on Industrial Electronics*, Vol. 64, No.2, pp. 1645 - 1655, 2017.
[Impact Factor: 7.168; Journal Rank: 1/58]
45. J. J. Rath, M. Defoort, H. Karimi, K. C. Veluvolu*, Output Feedback Active Suspension Control with Higher Order Terminal Sliding Mode, *IEEE Transactions on Industrial Electronics*, Vol. 64, No.2, pp. 1392 - 1403, 2017.
[Impact Factor: 7.168; Journal Rank: 1/58]
46. Y. Wang, K. C. Veluvolu*, "Evolutionary Algorithm Based Feature Optimization for Multi-Channel EEG Classification", *Frontiers in Neuroscience*, Vol. 11, No. 28. doi: 10.3389/fnins.2017.00028, Feb 2017.
[Impact Factor: 3.398;]
47. G. Shafiq, K. C. Veluvolu*, Multimodal chest surface motion data for respiratory and cardiovascular monitoring applications , *Scientific Data*, Vol. 4, No. 170052, Apr 2017.
[Impact Factor: 4.836; Journal Rank: 7/64]
48. A. Gautam, K. C. Veluvolu*, Y. C. Soh, Communication-computation trade-off in distributed consensus optimization for MPC-based coordinated control under wireless communications, *Journal of the Franklin Institute*, Vol. 354, No. 9, pp. 36543677, June 2017,
[Impact Factor: 3.139; Journal Rank: 9/85]
49. Y. Wang, K. C. Veluvolu*, Time-Frequency Analysis of Non-stationary Biological Signals with Sparse Linear Regression based Fourier Linear Combiner", *Sensors* , 17(6), 1386; June 2017.
[Impact Factor: 2.677; Journal Rank: 10/58]
50. D. Vangi, H. Steffan, J. Wang, K. C. Veluvolu , IEEE Access Special Section Editorial: Recent Advances on Modelling, Optimization and Signal Processing Methods in Vehicle Dynamics and Crash-worthiness, *IEEE Access*, Vol. 5, 2017, pp. 7517 - 7519, June 2017.
[Impact Factor: 3.244; Journal Rank: 27/146]
51. S. K. Kommuri, J. J. Rath, K. C. Veluvolu*, Sliding Mode Based Observer-Controller Structure for Fault-Resilient Control in DC Servomotors, *IEEE Transactions on Industrial Electronics*, (accepted, in press), 2017.
[Impact Factor: 7.168; Journal Rank: 1/58]
52. T. Carlo, K. C. Veluvolu, W. T. Ang*, A Kinematic Model of Bipedal Balance, *Bioinspiration & Biomimetics* , 2017.
53. J. J. Rath, M. Defoort, K. C. Veluvolu*, Output constrained cascade sliding mode based active suspension control, *IEEE Transactions on Industrial Electronics*, (under revision), Feb 2017.

54. Y. Wang, S. Tatinati, K. Nazarpour, W. T. Ang, K. C. Veluvolu*, "Quaternion Extreme Learning Machines based Physiological Tremor Prediction for Robotics Assisted Microsurgery", *Applied Soft Computing*, (submitted), 2017.

d) Refereed Conference Publications

55. W. Cao, Y. C. Soh and K. C. Veluvolu, *An integrated nonlinear observer with sliding mode estimation for a class of nonlinear uncertain systems*, in Proceedings of the 42nd IEEE Conference on Decision and Control, Hawaii, USA, 2003, pp. 5741-5746.
56. K. C. Veluvolu, Y. C. Soh and W. Cao, *Discrete-time Sliding Mode Observer Design for a Class of Uncertain Nonlinear Systems with Application to Bioprocess*, in Proceedings of ICARCV, Kunming - China, December 2004, pp. 855-860.
57. K. C. Veluvolu, Y. C. Soh, W. Cao, and Z. Y. Liu, *Observer with Multiple Sliding Modes for a Class of Nonlinear Uncertain Systems*, in Proceeding of American Control Conference, USA, 2005, 2445 -2450.
58. K. C. Veluvolu, Y. C. Soh, W. Cao, and Z. Y. Liu, *Discrete-time Sliding Mode Observers for a Class of Nonlinear Uncertain Systems*, in Proceedings of American Control Conference, USA, June 2006, 2605 -2610.
59. Zhou Jing, Meng Joo Er and K. C. Veluvolu, *Adaptive Output Control of Nonlinear Time-Delayed Systems with Uncertain Dead-Zone Input*, in Proceedings of American Control Conference, USA, June 2006, 5312 -5317.
60. K. C. Veluvolu, Y. C. Soh, W. Cao, and Z. Y. Liu, *Discrete-time Observers with Multiple Sliding Modes for a Class of Nonlinear Uncertain Systems*, in Proceedings of the 1st IEEE Conference on Industrial Electronics and Applications, Singapore, May 2006, 197 -202.
61. K. C. Veluvolu, S. Pavuluri, Y. C. Soh, W. Cao, and Z. Y. Liu, *Observers with Multiple Sliding Modes for Uncertain Linear MIMO Systems*, in Proceedings of the 1st IEEE Conference on Industrial Electronics and Applications, Singapore, May 2006, 185 -190.
62. K. C. Veluvolu, and Y. C. Soh, *Nonlinear Sliding Mode State and Unknown Input Estimations: A New Perspective*, in Proceedings of the *International Conference on Advances in Control and Optimization of Dynamical Systems (ACODS'2007)*, Bangalore, India, February 2007, 332 - 339.
63. K. C. Veluvolu, Y. C. Soh, W. Cao, and Z. Y. Liu, *Nonlinear Discrete-time Multiple Sliding Mode Observations with Application to Three-phase Current Motor*, IEEE Conference on Industrial Electronics and Applications, Harbin, China, June 2007, 531 - 536.
64. K. C. Veluvolu, U. X. Tan, W. T. Ang, W. T. Latt and C. Y. Shee, *Bandlimited Multiple Fourier Linear Combiner for Real-time Tremor Compensation*, IEEE Conference on Medicine and Biology, August 2007.
65. K. C. Veluvolu and Y. C. Soh, *High-Gain Observers with Multiple Sliding Mode for State and Unknown Input Estimations*, IEEE conference on Decision and Control, USA, December 2007.
66. W. T. Latt, U. X. Tan, K. C. Veluvolu, J. K. D. Lin, C. Y. Shee and W. T. Ang, *"System to Assess Accuracy of Micromanipulation"*, IEEE Conference on Medicine and Biology, August 2007.

67. U. X. Tan, F. Widjaja, W. T. Latt, K. C. Veluvolu, C. Y. Shee and W. T. Ang *Adaptive Rate-Dependent Feedforward Controller for Hysteretic Piezoelectric Actuator*, to be published, IEEE International Conference on Robotics and Automation, Pasadena, California, May, 2008.
68. W. T. Latt, A. E. Sidarta, K. C. Veluvolu, C. Y. Shee and W. T. Ang, "A study of a Hand-held Instrument's Angular Motion due to Physiological Tremor in Micromanipulation Tasks ", IEEE Conference on Medicine and Biology, Vancouver, Canada, August 2008, 1952 - 1955.
69. W. T. Latt, A. E. Sidarta, O. S. C. L. Ong, K. C. Veluvolu, C. Y. Shee and W. T. Ang, "Design and Implementation of a Two Degree-of-freedom Micromanipulation Assessment System ", IEEE Conference on Medicine and Biology, Vancouver, Canada, August 2008, 5640 - 5643.
70. K. C. Veluvolu, U. X. Tan, W. T. Latt, C. Y. Shee, and W. T. Ang, *Double Adaptive Bandlimited Multiple Fourier Linear Combiner for Estimation of Tremor*, submitted to, IEEE International Conference on Robotics and Biometrics, Bangkok, Thailand, 2008.
71. K. C. Veluvolu, H. G. Tan, C. Y. Shee and W. T. Ang, *Adaptive Estimation of EEG-rhythms for Event Classification*, submitted to, IEEE International Conference on Robotics and Biometrics, Bangkok, Thailand, 2008.
72. K. C. Veluvolu, D. Lee and Y. C. Soh, *State and Unknown Input Estimations for a Special Class of Nonlinear Uncertain Systems*, International Conference on Control and Applications, Christchurch, New Zealand, December, 2009.
73. W. T. Latt, U. X. Tan, K. C. Veluvolu, C. Y. Shee and W. T. Ang, *Real-time Estimation and Prediction of Periodic Signals from Attenuated and Phase-shifted Sensed Signals*, IEEE/ASME Conference on Advanced Intelligent Mechatronics, Singapore, June, 2009.
74. K. C. Veluvolu, and Y. C. Soh, *High Gain Observers with Multiple Sliding Mode for State and Unknown Input Estimations*, IEEE Conference on Industrial Electronics and Applications, Xian, China, May, 2009.
75. W. T. Latt, U. X. Tan, K. C. Veluvolu, C. Y. Shee and W. T. Ang, *Real-time Estimation and Prediction of Periodic Signals from Attenuated and Phase-shifted Sensed Signals*, IEEE/ASME Conference on Advanced Intelligent Mechatronics, Singapore, June, 2009.
76. K. C. Veluvolu, and Y. C. Soh, *Nonlinear Sliding Mode High-Gain Observers for Fault Detection*, VSS 2010, Mexico City, June, 2010, pp 203-208.
77. K. C. Veluvolu and F. Zhe, *Synchronization of Chaotic Systems with Sliding Mode Approach*, International Conference on Modeling, Simulation and Control, Cairo, Egypt, November, 2010, pp 41- 45.
78. K. C. Veluvolu, Y. Wang and S. Kavuri, *BMFLC based Time-Frequency Decomposition of EEG for Event-Related Desynchronization Detection*, International Conference on Computational Intelligence and Vehicular System, Cheju, Korea, November, 2010.
79. K. C. Veluvolu and Y. C. Soh, *Nonlinear Sliding Mode Observers for Fault Reconstruction and State Estimations*, ICARCV, Singapore, December, 2010.
80. Z. Fan, Y. Wang and K. C. Veluvolu, *Adaptive Estimation of bandlimited Physiological Signals in Real-time*, International Conference on Control Automation and Systems, Gyeongji,-do, Korea, 2011.

81. S. Tatinati, K. C. Veluvolu and W. T. Ang, *Autoregressive model with Kalman filter for Estimation of Physiological Tremor in Surgical Robotic Applications*, International Conference on Control Automation and Systems, Gyeonggi-do, Korea, 2011.
82. K. C. Veluvolu, Y. Wang and M. Defoort, *Adaptive Estimation of EEG for Subject-specific Reactive Band Identification and Improved ERD Detection*, IASTED Conference on Applied Simulation and Modeling, Naples, Italy, 2012.
83. M. Defoort, J. V. Gorp, M. Djemai, K. C. Veluvolu, *Hybrid observer for switched linear systems with unknown inputs*, IEEE Conference on Industrial Electronics and Applications, Singapore, July 2012.
84. Y. Wang and K. C. Veluvolu, *Time frequency decomposition of bandlimited Signals with BMFLC and Kalman Filter*, IEEE Conference on Industrial Electronics and Applications, Singapore, July 2012.
85. S. K. Kommuri, K. C. Veluvolu and M. Defoort, *Sensorless speed estimation of a PMSM using higher-order sliding mode observer*, IET International Conference on Information Science and Control Engineering, Shenzhen, China, Dec 2012.
86. S. Tatinati and K. C. Veluvolu, *Multi-step Tremor Prediction with Autoregressive (AR) model and Kalman filter (KF) for Surgical Robotics Applications*, IEEE International Conference on Power, Energy & Control, Dindigul, India, Feb 6-8, 2013.
87. Y. Wang, V. Gonuguntla, G. Shafiq and K. C. Veluvolu, *BMFLC with Neural Network and DE for better Event Classification*, 2013 IEEE International Winter Workshop on Brain-Computer Interface, High 1 Resort, South Korea, Feb 18-20, 2013, pp 34 – 35.
88. S. Tatinati, Y. Wang, G. Shafiq and K. C. Veluvolu, *Online LS-SVM Based Multi-Step Prediction of Physiological Tremor for Surgical Robotics*, 35th Annual International IEEE EMBS Conference, Osaka, Japan, July 2013.
89. V. Gonuguntla, Y. Wang and K. C. Veluvolu, *Phase Synchrony in Subject-Specific Reactive Band of EEG for Classification of Motor Imagery Tasks*, 35th Annual International IEEE EMBS Conference, Osaka, Japan, July 2013.
90. K. C. Veluvolu, S. Tatinati, S. M. Hong, W. T. Ang, *Multi-Step Prediction of Physiological Tremor for Robotics Applications*, 35th Annual International IEEE EMBS Conference, Osaka, Japan, July 2013.
91. S. Kommuri, K. C. Veluvolu, M. Defoort, *Robust Observer with Higher-Order Sliding Mode for Sensorless Speed Estimation of a PMSM*, European Control Conference, Zurich, Switzerland, July 2013.
92. S. Tatinati, K. C. Veluvolu, W. T. Ang, *Filtering and Prediction of Pathological Tremor for FES Applications*, i-Create, Gyeonggi-do, Seoul, August 2013.
93. J. J. Rath, K. C. Veluvolu, D. Zhang, Q. Zhang, and M. Defoort, *Estimation of Road Adhesion Coefficient using Higher-Order Sliding Mode Observer for Torsional Tyre Model*, International Conference on Intelligent Robotics and Applications, Pusan, September 2013.

94. G. Shafiq, Y. Wang, S. Tatinati, K. C. Veluvolu, *ICA for Separation of Respiratory motion and Heart motion from Chest surface motion*, The 20th International Conference on Neural Information Processing, Daegu, November, 2013.
95. Y. Wang, V. Gonuguntla, G. Shafiq, K. C. Veluvolu, *Performance Comparison of Spatial Filter with Multiple BMFLCs for BCI Applications*, The 20th International Conference on Neural Information Processing, Daegu, November, 2013.
96. Yukob, M. Lee, K. C. Veluvolu, *Phase Synchrony for Human Implicit Intent Differentiation*, The 20th International Conference on Neural Information Processing, Daegu, November 2013.
97. S. Kommuri, J. J. Rath, K. C. Veluvolu, and M. Defoort, *An Induction Motor Sensor Fault Detection and Isolation based on Higher Order Sliding Mode Decoupled Current Controller*, European Control Conference, France, 2014.
98. S. Tatinati, K. C. Veluvolu, S. M. Hong, A. Krasoulis, K. Nazarpour, *Real-Time Prediction of Respiratory Motion Traces For Radiotherapy with Ensemble learning*, 36th Annual International IEEE EMBS Conference, Chicago, August 2014.
99. J. J. Rath, K. C. Veluvolu and M. Defoort, *Estimation of Road Profile for Suspension Systems Using Adaptive Super-Twisting Observer*, European Control Conference, France, 2014.
100. S. K. Kommuri, J. J. Rath, K. C. Veluvolu, and M. Defoort, *Robust Fault-Tolerant Cruise Control of Electric Vehicles based on Second-order Sliding Mode Observer*, International Conference on Control, Automation and Systems, Gyeonggi-do, Korea, October, 2014.
101. S. Tatinati, K. C. Veluvolu, *Short-Term Wind Speed Forecasting with A Cascade Hybrid Method*, 4th International Conference on Power and Energy Systems (ICPES), pp. –, Singapore, November 2014.
102. Y. Wang, K. C. Veluvolu, *Day-ahead Electricity Price Forecasting Using Relevance Vector Machine*, 4th International Conference on Power and Energy Systems (ICPES), pp. –, Singapore, November 2014.
103. S. Tatinati, K. C. Veluvolu, *Respiratory motion prediction with moving window based LS-SVM*. 2nd International Conference on Signal Processing & Integrated Networks (SPIN), pp. 984-987, New Delhi, February 2015.
104. K. C. Veluvolu, J. J. Rath, M. Defoort, Y. C. Soh, *Estimation of side slip and road bank angle using high gain observer and higher order sliding mode observer*, International Workshop on Recent Advances in Sliding Modes (RASM), Istanbul, April 2015.
105. K. Adhikari, S. Tatinati, K. C. Veluvolu, K. Nazarpour, *Modeling 3D tremor signals with a quaternion weighted Fourier linear combiner*, 7th International IEEE EMBS Neural Engineering Conference (NER), Montpellier, France, April 2015.
106. J.J. Rath, K. C. Veluvolu, and M. Defoort, *Output feedback based Sliding mode Control of Active Suspension using Backstepping*, International Conference on Control, Engineering & Information Technology, Tlemcen, Algeria, May 2015

107. S. K. Kommuri, K. C. Veluvolu, and M. Defoort, *Second-order Sliding Mode based Sensor Fault-Tolerant Control of Induction Motor Drives*, International Conference on Industrial Instrumentation and Control, India, May 2015.
108. Y. Wang, V. Gonuguntla, K. C. Veluvolu, *Spatial Filter and Feature Selection Optimization based on EA for multi-channel EEG*, 37th Annual International Conference of the IEEE Engineering in Medicine and Biology Society, Milan, Aug 2015.
109. V. Gonuguntla, Y. Wang, K. C. Veluvolu, *Classification of Emotions with EEG based Brain Functional Network*, 37th Annual International Conference of the IEEE Engineering in Medicine and Biology Society, Milan, Aug 2015.
110. J. J. Rath, Suneel K. Kommuri, K. C. Veluvolu, M. Defoort, *An adaptive modified super-twisting sliding mode controller: Applied to the active suspension system*, 15th International Conference on Control, Automation and Systems (ICCAS), Busan, Oct 2015.
111. Suneel K. kommuri, Jagat J. Rath, K. C. Veluvolu, M. Defoort *Performance Comparison of Sliding Mode Observers for Back EMFs based Speed Estimation in PMSM*, 15th International Conference on Control, Automation and Systems (ICCAS), Busan, Oct 2015.
112. V. Gonuguntla, R. Mallipeddi and K. C. Veluvolu, *Identification of emotion associated brain functional network with phase locking value*, 38th Annual International Conference of the IEEE Engineering in Medicine and Biology Society (EMBC), Florida, USA, August 2016.
113. G. Shafiq, S. Tatinati and K. C. Veluvolu, *Automatic Annotation of peaks in Seismocardiogram for Systolic Time Intervals*, 38th International Conference on IEEE Engineering in Medicine and Biology (EMBC), Florida, USA, August 2016.
114. S. Tatinati, Y. N. Aye, A. Pual, W. T. Ang and K. C. Veluvolu, *Three-dimensional modeling of physiological tremor for hand-held surgical robotic instruments*, 38th International Conference on IEEE Engineering in Medicine and Biology (EMBC), Florida, USA, August 2016.
115. G. Shafiq and K. C. Veluvolu, *Wearable Accelerometer based Pseudo-ECG Generation*, International Symposium on Computer Science & Computer Engineering, Hamburg, Germany, September 2016.
116. S. Kommuri, G. Shafiq, J. J. Rath and K. C. Veluvolu, *Robust Control of DC Motor Drives using Higher-order Integral Terminal Sliding Mode*, International Conference on Control, Automation, Robotics and Vision (ICARCV 2016), Phuket, Thailand, November 2016.
117. S. Tatinati, Y. Wang and K. C. Veluvolu, *Modeling of Physiological Tremor with Quaternion Variant of Extreme Learning Machines*, 2nd International Conference on Communication and Information Processing (ICCIP), Singapore, November 2016.
118. V. Gonuguntla and K. C. Veluvolu, *Emotion Associated Brain functional Network Analysis in Human EEG using Graph Measures*, 194th International Academic Conference on Development in Science and Technology (IACDST), Edinburgh, UK, June 2017.

119. S. Kommuri, J. J. Rath G. Shafiq, V. Gonuguntla and K. C. Veluvolu, *Sliding Mode Based Incipient Sensor Fault-Tolerant Control for DC Servomotor Drives*, 14th ECTI-CON, Phuket, Thailand, June 2017.
120. Y. Wang, S. Tatinati, L. Huang, J. H. Kim, G. Shafiq, K. C. Veluvolu and A. W. H. Khong, *Predictive Local Receptive Fields based Respiratory Motion Tracking for Motion-Adaptive Radiotherapy*, 39th Annual International Conference of the IEEE Engineering in Medicine and Biology Society (EMBC), Jeju, South Korea, July 2017.
121. K. Adhikari, S. Tatinati, K. C. Veluvolu and K. Nazarpour, *Real-Time Physiological Tremor Estimation using Recursive Singular Spectrum Analysis*, 39th Annual International Conference of the IEEE Engineering in Medicine and Biology Society (EMBC), Jeju, South Korea, July 2017.
122. V. Palakonda, T.Pamulapati, R. Mallipeddi, P. P. Biswas and Kalyana C. Veluvolu, *Nondominated Sorting based on Sum of Objectives*, 2017 IEEE Symposium Series on Computational Intelligence, Honolulu, Hawaii, USA, Nov 2017.

Books/Thesis

123. K. C. Veluvolu and Y. C. Soh, *Nonlinear Sliding Mode State and Unknown Input Estimations*, VDM-Verlag, Germany, 2009.
124. K. C. Veluvolu, *PhD Thesis, Sliding Mode Observers and Unknown Input Estimations for Nonlinear Systems*, NTU Library, NTU 2007.

PHD/MENG
ADVISING

Doctoral Degree Students:

- Tatinati Sivanagaraja, Ph.D., 2010.08 - 2016.02 (graduated)
Thesis: *Physiological Tremor Modeling for Surgical Robotics Applications (Best PhD Thesis Award)*
- Wang Yubo, Ph.D., 2011.07 - 2016.02 (graduated)
Thesis: Adaptive Modeling of EEG for Feature Extraction in Brain Computer Interface
- Jagat Jyothi Rath, Ph.D., 2012.09 - 2016.08 (graduated)
Thesis: Robust estimation and control of integrated longitudinal-vertical vehicle motion
(Best PhD Thesis Award)
- Suneel Kommuri, Ph.D., 2012.09 - 2016.08 (graduated)
Thesis: Higher-order Sliding Mode based FDD and FTC for Industrial Drives
- Gonugula Venkateswara Rao, Ph.D., 2014.08 - 2018.02 (graduated)
Thesis: EEG based Brain Functional Network Analysis for Neural Disorders
- Ghufran Shafiq, Ph.D., 2012 -(expected graduation date: 2018.06)
Thesis: Wearable Sensors for Long-term Health Monitoring
- Daijiry Narzary, Ph.D., 2017.08 -
Thesis: Nonlinear Control and Observers for Industrial Drives

Padma Priya, M.S+ Ph.D., 2017.08 -

Thesis: Brain Functional Connectivity for ADHD Children

Master's by Research Students:

Fan Zhe, MS with Research, 06/2012 (graduated)

Thesis: Real-time Estimation of Band-limited Physiological Signals with BMFLC-RLS

Suneel Kommuri, MS with Research, 03/2013 (graduated)

Thesis: Sensorless Control and Estimation for Industrial Applications

Gonugula Venkateswara Rao, MS with Research, 08/2014 (graduated)

Thesis: EEG based Brain Functional Network Analysis for BCI Applications

Seunghyun Lee, MS with Research, 02/2016 (graduated)

Thesis: Hybrid Navigation with Inertial Sensors for Brain Surgery

POST-DOC/ RESEARCH ASSOCIATES

- Sivanagaraja Tatinati (2016.02- present), Post-doctoral fellow
- Ajay Gautam (2015.07 - 2016.07), Post-doctoral fellow
- Kim Hye (2015 - present), Research Assistant
- Yoo Jong Min (2010 -2012), Research Associate
- Lee Nam Hyun (2011 - 2012), Research Associate
- Lee Sang Hwa (2011-2013), Research Associate

PROFESSIONAL MEMBERSHIPS

- Senior Member, IEEE, USA
- Member, Sigma Xi, USA

INTERNAL/EXTERNAL REFEREE FOR MASTER'S AND PHD THESIS

- *Internal Referee - PhD Thesis - Mr. Qing Zhang*, Embedded Emotion Machine Based on EEG and Visual Multimodal Signals, Kyungpook National University, 2011.
- *External Referee - PhD Thesis- Mr. Uttam Kumar*, Study and implementation of Iris Recognition Algorithms and Applications with special reference to Industrial and Clinical Predictions, University of Pune, India, 2012
- *Internal Referee - PhD Thesis - Mr. Kim Dongil*, Actuator Fault using Local Diagnosis and IMC-PID, Kyungpook National University, South Korea, 2014.
- *Internal Referee - PhD Thesis - Mr. Hamadache Moussa*, Rotor Speed Based Bearing Fault Diagnosis Using Absolute Value PCA, Kyungpook National University, South Korea, 2015.
- *External Referee - PhD Thesis - Mr. Harikrishna*, Optimal Load Frequency control for Deregulated Power System, Acharya Nagarjuna University, India, 2016.
- *External Referee - PhD Thesis - Mr. Yan Naing Aye*, Real-Time High Performance Displacement Sensing in Handheld Instrument for Microsurgery, Nanyang Technological University, Singapore, 2016.
- *Internal Referee - MEng Thesis - Mr. Syam Kumar*, Digital control scheme for Resonant converter, Kyungpook National University, South Korea, 2012.

- *Internal Referee - MEng Thesis - Mr. Syam Kumar*, Human Intelligence Recognition based on EEG, Kyungpook National University, South Korea, 2013.
- *Internal Referee - MEng Thesis - Mr. Ukeob Park*, Detection of Emotional Brain Features During Informational Implicit Intention, Kyungpook National University, South Korea, 2014.

PROFESSIONAL
RESPONSIBILITIES

Editorial Responsibilities:

- *Associate Editor*, IEEE Access, 2016
- *Associate Editor*, Systems Science & Control Engineering, Taylor & Francis, 2015 - present
- *Associate Editor*, Mathematical Problems in Engineering, 2013 - Present
- *Associate Editor*, Journal of Control Science and Engineering, 2013 - Present
- *Review Editor*, Frontiers in Neuroengineering, 2013- Present

Technical and Scientific Committees:

- *Program Chair*, 9th International Convention on Rehabilitation Engineering and Assistive Technology (I-CREATE), Singapore, 2015
- *Publicity Chair*, The International Conference on Control, Engineering & Information Technology (CEIT), Tlemcen, 2015
- *Program Committee*, Asia Pacific AR&TTS Workshop, Singapore, 2015
- *Session Chair*, International Conference on Control, Automation, Robotics and Vision, Thailand,
- *Session Chair*, International Conference on Neural Information Processing, Korea, 2013
- *Session Chair*, IASTED Conference on Applied Simulation and Modeling, Naples, Italy, 2012
- *Session Chair*, IEEE Conference on Industrial Electronics and Applications, Singapore, 2012
- *Session Chair*, IEEE Conference on Industrial Electronics and Applications, Xian, 2009
- *Program Committee*, Biorobotics Workshop, Singapore, 2008
- *Review Committee*, National Science Centre Poland, 2015

Reviewer:

- Reviewer, IEEE Transactions on Industrial Electronics
- Reviewer, IEEE Transactions on Automatic Control
- Reviewer, International Journal of Control
- Reviewer, Scientific Reports
- Reviewer, IEEE Transactions on Neural Systems and Rehabilitation Engineering
- Reviewer, IEEE Transactions on Biomedical Engineering
- Reviewer, IEEE Transactions on Cybernetics

- Reviewer, IEEE Transactions on Haptics
- Reviewer, Asian Journal of Control
- Reviewer, Biomedical Signal Processing and Control
- Reviewer, International Journal of Robust and Nonlinear Control
- Reviewer, Sensors
- Reviewer, IET Proceedings on Control Theory and Applications
- Reviewer, Signal Processing Journal
- Reviewer, Automatica
- Reviewer, International Journal of Medical Robotics and Computer Assisted Surgery
- Reviewer, International Journal of Systems Science
- Reviewer, IEEE Journal of Special Topics in Signal Processing
- Reviewer, International Journal of Adaptive Control and Signal Processing
- Reviewer, Journal of the Franklin Institute

INVITED TALKS
(KEYNOTE,
PLENARY AND
INVITED)

- *Keynote talk*, Biomedical Systems and Robotics, National Conference on Man Machine Interaction, Chennai, India, Apr, 2014
- *Plenary talk*, Surgical and Rehabilitation Robotics, TARANG- National Level Technical Symposium, Guntur, India, Feb, 2010.
- *Plenary talk*, Signal Processing in Surgical and Rehabilitation Robotics, GIST Information Mechatronics Week, Gwangju Institute of Science & Technology, Gwangju, Korea, September, 25, 2009.
- *Invited talk*, Multi-dimensional Signal Processing for Biomedical Systems and Robotics, University of Newcastle, United Kingdom, Jan, 2017.
- *Invited talk*, Robotic Cognition for Biomedical Systems and Robotics, University of Valenciennes, France, Aug, 2016.
- *Invited talk*, Current Research Trends in Hand-held Surgical Robotics, Indian Institute of Technology, Chennai, India, June, 2016.
- *Invited talk*, Multi-Dimensional Tremor Modeling for Active Compensation in Hand-held Surgical Robotics, Nanyang Technological University, Singapore, Feb, 2016.
- *Invited talk*, Signal processing for Biomedical Robotics Applications Applications, Indian Institute of Technology (IIT), Delhi, India, June, 2014.
- *Invited talk*, Robotic Compensation of Tremor in Microsurgery, Invited talk, Indian Institute of Technology (IIT), Hyderabad, India, Feb, 2014.
- *Invited talk*, Time Frequency Decomposition and Phase Synchrony with EEG for BCI Applications, Korea Institute of Science and Technology, Seoul, South Korea, OCT, 2013.
- *Invited talk*, Brain Signal processing for BCI Applications, Indian International Institute of Information Technology (IIIT), Hyderabad, India, Feb, 2013.
- *Invited talk*, Signal processing, Modeling and Observers Design for Control and Biomedical Applications, LAMIH, CNRS, University de Valenciennes, France, July, 2012.

- *Invited talk*, Sliding Mode Observers for State and Unknown Input Estimations, School of Electrical Engineering, Xian Jiatong University, Xian, China, May 14, 2009.
- *Invited talk*, Research in Nonlinear Control and Signal Processing, School of Electrical Engineering and Computer Science, Kyungpook National University, Daegu, South Korea, October, 2008.
- *Invited talk*, Signal Processing in Surgical and Rehabilitation Robotics, Department of Biomedical Engineering, University of Eindhoven, Eindhoven, Netherlands, October, 2008.
- *Invited talk*, Research Opportunities in Singapore and South East Asia, Department of Electrical Engineering, RVRJC College of Engineering, Nagarjuna University, India, May, 2007.

HONORS AND AWARDS

- *Excellent Research Award*, Kyungpook National University, 2017.
- *Excellent Researcher*, Kyungpook National University, 2016.
- *Visiting Fellowship*, Newcastle University, UK, 2017.
- *Qualcomm Innovation Award*, 2016.
- *Shortlisted for Best Paper*, American Control Conference, 2006.
- *NTU Research Fellowship*, Nanyang Technological University, 2002-2006,
- *First prize* for Academic Excellence in B.Tech degree, 2000-2002.
- *Merit scholarship*, Govt. of India, 1996 - 2002.
- *First prize* for Academic Excellence in Secondary School, 1996.

COMMITTEE AND ADMINISTRATIVE RESPONSIBILITIES

1. 2014-2015, Graduate School Improvement Committee, College of IT Engineering, KNU, Korea
2. 2013-2015, BK21-Plus ICT Committee, College of IT Engineering, KNU, Korea
3. 2010 - Present, Graduate Student Selection Committee, College of IT Engineering, KNU, Korea.
4. 2010 - 2012, Advisory Committee, College of IT Engineering, KNU, Korea.
5. 2011 - Present, PhD Thesis Committee, College of IT Engineering, KNU, Korea.
6. 2010 - Present, Master Thesis Committee, College of IT Engineering, KNU, Korea.