Ashwin B. Parthasarathy

Assistant Professor,
Department of Electrical Engineering,
University of South Florida,

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POSITIONS

2016 – current	**Assistant Professor**, Department of Electrical Engineering University of South Florida, Tampa, FL
2012 – 2016	**Postdoctoral Fellow**, in Physics and Astronomy, University of Pennsylvania, Philadelphia, PA Mentors: Dr. Arjun Yodh (Physics), Dr. John Detre (Neurology)
2010 – 2012	**Postdoctoral associate** in Biomedical Engineering, Boston University, Boston, MA Mentor: Dr. Jerome Mertz

RESEARCH SUPPORT

14POST20460161 (Parthasarathy) 07/01/2014 - 06/30/2016 $97,000
American Heart Association

Noninvasive measurement of cerebrovascular regulation in brain injured patients with Diffuse Correlation Spectroscopy

EDUCATION AND TRAINING

2007 – 2010	**Ph.D.** in Biomedical Engineering, The University of Texas at Austin, Austin, TX Mentor: Dr. Andrew Dunn
2005 – 2007	**M.S.** in Electrical and Computer Engineering, The University of Texas at Austin, Austin, TX Mentor: Dr. Andrew Dunn
2001 – 2005	**B.E.** in Electrical and Electronics Engineering, Anna University, Chennai, India

AWARDS AND HONORS

2014 - 2016	Postdoctoral Fellowship, American Heart Association Great Rivers Affiliate
2014	Biomedical Postdoctoral Program travel award, University of Pennsylvania
2012	Best Poster Award, Gordon Research Conference on Lasers in Surgery and Medicine

2010	Best Student Poster Award, Optical Society of America BIOMED Topical Meeting
2010	Professional Development Award, Graduate School, The University of Texas at Austin
2009	Finalist, Emil Wolf Best Student Paper Competition, Optical Society of America Frontiers in Optics
2007	Professional Development Award, Graduate School, The University of Texas at Austin
2007	Student Travel grant, Engineering Conferences International
2004	Academic Merit Scholarship, SSN Institutions, Anna University, India
2003	Academic Merit Scholarship, SSN Institutions, Anna University, India

PUBLICATIONS *Total citations per Google Scholar (as of 11/15/2016): 436, h-index: 8, i-10 index: 7*

Peer Reviewed Journal Publications

1. Favilla C, **Parthasarathy AB**, Detre JA, Mullen M, Yodh AG, Kasner S, Gannon K, and Messe´ S (2016), "Non-invasive Respiratory Impedance Enhances Cerebral Perfusion in Healthy Adults", *Stroke (in review)*.

2. Wang D, **Parthasarathy AB***, Baker WB, Gannon K, Kavuri V, Ko TS, Schenkel S, Li Z, Li Z, Mullen TM, Detre JA, and Yodh AG (2016), "Fast blood flow monitoring in deep tissues with real-time software correlators", *Biomedical Optics Express,* 7 (3), 776-797.

    - Corresponding, lead author

3. Li Z, Baker WB, **Parthasarathy AB**, Ko TS, Wang D, Schenkel S, Durduran T, Li G, and Yodh AG (2015). "Calibration of diffuse correlation spectroscopy blood flow index with venous-occlusion diffuse optical spectroscopy in skeletal muscle", *Journal of Biomedical Optics*, 20 (12), 125005. PMID: 26720870 PMCID: PMC4688416

4. Baker WB, **Parthasarathy AB**, Ko T, Busch DR, Abramson K, Mesquita RC, Durduran T, Greenberg JH, Kung D and Yodh AG (2015). "Probe pressure modulation algorithm reduces extra-cerebral contamination in optical measurements of cerebral hemodynamics", *Neurophotonics,* 2 (3), 035004 PMID: 26301255 PMCID: PMC4524732.

5. Holt D, **Parthasarathy AB**, Okusanya O, Keating J, Venegas O, Yodh AG, Deshpande C, Karakousis G, Madajewski B, Durham A, Nie S, and Singhal S (2015). "Intraoperative near-infrared fluorescence imaging and spectroscopy identifies residual tumor cells in wounds", *Journal of Biomedical Optics,* 20 (7), 076002, PMID: 26160347 PMCID: PMC4497968.

6. Baker WB, **Parthasarathy AB**, Busch DR, Mesquita RC, Greenberg JH, and Yodh AG (2014). "Modified Beer-Lambert law for blood flow", *Biomedical Optics Express*, 5 (11), 4053-75 PMID: 25426330 PMCID: PMC4242038

    - Top 10 downloaded Nov 2014.

7. Buckley EM, **Parthasarathy AB**, P Ellen Grant, Yodh AG, and Franceschini MA (2014). "Diffuse correlation spectroscopy for measurement of cerebral blood flow: future prospects", *Neurophotonics,* 1 (1), 011009, PMID: 25593978 PMCID: PMC4292799.

- Special section on the BRAIN initiative

8. S. M. Shams Kazmi, **Parthasarthy AB**, Song N. E, Jones T.A, and Dunn AK (2013), "Chronic Imaging of Cortical Blood Flow using Multi-Exposure Speckle Imaging", *Journal of Cerebral Blood Flow & Metabolism,* 33 (6), 798-808, PMID: 23571277 PMCID: PMC3677120.

    - Featured cover article on Journal of Cerebral Blood Flow & Metabolism
    - 35 citations as of 11/15/2016

9. **Parthasarathy AB**, Chu KK, Ford TN, and Mertz J (2012). "Quantitative phase imaging using a partitioned detection aperture", *Optics Letters,* 37 (19), 4062-4064, Pubmed PMID: 23027279.

    - 39 citations as of 11/15/2016

10. **Parthasarathy AB,** Weber EL, Richards LM, Fox DJ, and Dunn AK, "Laser Speckle Contrast Imaging of Cerebral Blood Flow in humans during neurosurgery: A pilot clinical study" (2012). *Journal of Biomedical Optics,* 15 (6), 066030, Pubmed PMID: 21198204.

    - 60 citations as of 11/15/2016
    - First label-free CBF imaging during human neurosurgery in the US

11. **Parthasarathy AB,** S.M. Shams Kazmi, and Dunn AK (2010). "Quantitative imaging of ischemic stroke through thinned skull in mice with Multi Exposure Speckle Imaging", *Biomedical Optics Express,* 1 (1), 246-259, PMID: 21258462 PMCID: PMC3005179

    - 43 citations as of 11/15/2016

12. Zaman RT, **Parthasarathy AB,** Vargas G, Chen B, Dunn AK, Rylander III HG, and Welch AJ (2009). "Perfusion in hamster skin treated with glycerol", *Lasers in Surgery and Medicine,* 41 (7), 492-503, PMID: 19670326

13. **Parthasarathy AB,** Tom WJ, Gopal A, Zhang XJ, and Dunn AK (2008). "Robust flow measurement with multi-exposure speckle imaging", *Optics Express,* 16 (3), 1975-1989, PMID: 18542277

    - 182 citations as of 11/15/2016

Manuscripts in preparation

Parthasarathy AB*, Gannon K*, Abramson K, Zandieh A, Baker WB, Mullen TM, Detre JA, and Yodh AG, "Cerebral autoregulation dynamics with fast diffuse correlation spectroscopy", 2016

Parthasarathy AB*, Mullen MT*, Zandieh A, Baker WB, Kasner SE, Detre JA, and Yodh AG, "Cerebral blood flow response to bolus normal saline", 2016

Parthasarathy AB*, Baker WB*, Kavuri V, Gannon K, Mullen MT, Detre JA, and Yodh AG, "Non-invasive measurement of critical closing pressure in healthy adults with optics", 2016

Peer-Reviewed Conference Proceedings and Abstracts

1. **Parthasarathy AB** , Gannon K, Baker WB, Kavuri K, Mullen M, Detre JA, and Yodh AG (2016), "Cerebral Autoregulation Dynamics with High-Speed Diffuse Correlation Spectroscopy,"

in *Biomedical Optics 2016, OSA Technical Digest (online), Optical Society of America, Paper BTh4D.7.*

2. Chong S, **Parthasarathy AB**, Kavuri V, de Kernier IL, Moscatelli FA, Singhal S, and Yodh AG (2016), "Intraoperative Spatial Frequency Domain Diffuse Optical Tomography with Indocyanine Green (ICG) Fluorescence Contrast," in *Biomedical Optics 2016, OSA Technical Digest (online), Optical Society of America, paper OTh2C.2.*

3. Kavuri VC, Baker WB, **Parthasarathy AB**, Balu R, Yodh AG, and Kofke A (2016), "A Combined Diffuse Correlation and Time-Resolved Spectroscopy Instrument for Continuous monitoring of Absolute Cerebral Blood Flow," *in Biomedical Optics 2016, OSA Technical Digest (online), Optical Society of America, paper JW3A.8.*

4. **Parthasarathy AB**, Gannon K, Baker WB, Kavuri V, Mullen MT, Detre JA and Yodh AG (2016), "Functional monitoring of blood flow dynamics in brain with photon correlation techniques", *Proc. Of SPIE 9707, Dynamics and Fluctuations in Biomedical Photonics XII, 97070H*

5. Mullen MT, **Parthasarathy AB**, Zandieh A, Baker, W, Kasner SE, Yodh AG and Detre JA (2016), "Cerebral Blood Flow Response to Bolus Normal Saline", *Stroke **47** (Sup. Iss. 1), Session – In-Hospital Treatment Posters I***,** Abstract WP339.

6. **Parthasarathy AB**, Chong SH, Moscatelli FA, Singhal S and Yodh AG (2015) "Intraoperative imaging of tumors with Indo-cyanine Green fluorescence with an endoscope", *Proc. SPIE 9311, Molecular-Guided Surgery: Molecules, Devices, and Applications, 93110X.*

7. Baker WB, **Parthasarathy AB**, Busch DR, Mesquita RC, Greenberg JH and Yodh AG (2015), "Modified Beer-Lambert law for blood flow", *Proc. SPIE 9319, Optical Tomography and Spectroscopy of Tissue XI, 931919.*

8. **Parthasarathy AB**, Schenkel S, Busch DR, Abramson K, Menko J, Baker W, Chandra M, Mullen M, Detre J, and Yodh AG (2014). "Optical Monitoring of Cerebral Blood Flow in Patients with Acute Ischemic Stroke during Intravenous Administration of Normal Saline," in *Biomedical Optics, OSA Technical Digest (online) Optical Society of America, Paper BW2B.5.*

9. Baker W, Busch DR, **Parthasarathy AB**, Mesquita RC, Chandra M and Yodh AG (2014). "Probe pressure modulation algorithm reduces extracerebral contamination in optical measurements of cerebral blood flow" in *Biomedical Optics, OSA Technical Digest (online), Optical Society of America, Paper BS3A.52*

10. Richards LM, Weber EL, **Parthasarathy AB**, Kappeler KL, Fox DJ and Dunn AK (2012). "Intraoperative laser speckle contrast imaging for monitoring cerebral blood flow: results from a 10-patient pilot study", *Proc. SPIE 8207, Photonic Therapeutics and Diagnostics VIII, 82074L.*

11. **Parthasarathy AB**, S. M. Shams Kazmi, Salvaggio A and Dunn AK (2010). "Quantitative cerebral blood flow measurement of ischemic stroke in mice with Multi Exposure Speckle Imaging," in *Biomedical Optics, OSA Technical Digest (CD), Optical Society of America, Paper BWA5.*

12. **Parthasarathy AB**, Weber EL, Richards LM, Burnett MG, Fox DJ, and Dunn AK (2010). "Cerebral Blood Flow Imaging during Neurosurgery with Laser Speckle Contrast Imaging," in *Biomedical Optics, OSA Technical Digest (CD), Optical Society of America, Paper JMA99.*

13. **Parthasarathy AB**, Ponticorvo A, S. M. Shams Kazmi, and Dunn AK (2009). "Quantitative Cerebral Blood Flow Measurement through Thinned Skull with Multi Exposure Speckle Imaging," in *Frontiers in Optics, OSA Technical Digest (CD), Optical Society of America, Paper FME2.*

14. Dunn AK and **Parthasarathy AB** (2008), "Quantitative Blood Flow Measurements with Multi-Exposure Speckle Contrast Imaging," in *Conference on Lasers and Electro-Optics/Quantum Electronics and Laser Science Conference and Photonic Applications Systems Technologies, OSA Technical Digest (CD), Paper CThG2*.

15. Zaman RT, Chen B, **Parthasarathy AB**, Estrada Jr. AD, Ponticorvo A, Rylander III HG, Dunn AK and Welch AJ (2008). "Enhancement of light in tissue using hyper-osmotic agents", *Proc. SPIE 6854, Optical Interactions with Tissues and Cells XIX, 68541F.*

16. **Parthasarathy AB**, Shin WG, Zhang XJ and Dunn AK (2007). "Laser speckle contrast imaging of flow in a microfluidic device", *Proc. SPIE 6446, Biomedical Applications of Light Scattering, 644604.*

17. **Parthasarathy AB**, Srinivasan D, Ramaswamy SA, and Thyagarajan S (2004). "Parametric simulation of Heart Rate Variability", *IEEE National Conference on Biosignal, Communication and Networking.*

18. **Parthasarathy AB**, Srinivasan D, Ramaswamy SA, and Rao MM (2004). "A Binasal airflow monitor", *National Conference on Biomedical Engineering, NCBME, Biomedical Engineering Society of India.*

PRESENTATIONS *(as primary author)*

1. **Parthasarathy AB**, Gannon K, Baker WB, Kavuri V, Mullen MT, Detre JA, and Yodh AG, "Cerebral Autoregulation Dynamics with High-Speed Diffuse Correlation Spectrosopy", *Optics and the Brain: Optical Imaging of the Human Brain, OSA Biomedical Optics Congress, Hollywood FL, April 25-28, 2016.*

2. **Parthasarathy AB**, Chong SH, Moscatelli FA, Singhal S, and Yodh AG, "Intraoperative imaging of tumors with Indo-cyanine Green fluorescence with an endoscope", *Molecular-Guided Surgery: Molecules, Devices, and Applications, SPIE Photonics West, February 7-12, 2015.*

3. **Parthasarathy AB**, Schenkel SS, Busch DR, Abramson K, Menko J, Baker WB, Chandra M, Mullen M, Detre JA, and Yodh AG, "Optical Monitoring of Cerebral Blood Flow in Patients with Acute Ischemic Stroke during Intravenous Administration of Normal Saline", in *4th Annual Center for Magnetic Resonance and Optical Imaging (CMROI) Workshop on Imaging Biomarkers, University of Pennsylvania, March 18, 2014.*

4. **Parthasarathy AB**, Schenkel SS, Busch DR, Abramson K, Menko J, Baker WB, Chandra M, Mullen M, Detre J, and Yodh AG, "Optical Monitoring of Cerebral Blood Flow in Patients with Acute Ischemic Stroke During Intravenous Administration of Normal Saline," in *OSA Biomedical Optics Topical Meeting, Miami FL, April 26-30 2014.*

5. **Parthasarathy AB,** Chu KK, Chan CR, Ford TN and Mertz J, "High speed quantitative phase imaging using a partitioned detection aperture", *Gordon Research Conferences – Lasers in Medicine and Biology, Holderness, NH, July 22-27, 2012.*

    - Best Poster Award

6. **Parthasarathy AB**, S. M. Shams Kazmi, Salvaggio A, and Dunn AK, "Quantitative cerebral blood flow measurement of ischemic stroke in mice with Multi Exposure Speckle Imaging", *OSA Biomedical Optics and 3D Imaging (BIOMED) Topical meeting, Miami, FL, April 11-14, 2010.*

7. **Parthasarathy AB**, Weber EL, Richards LM, Burnett MG, Fox DJ, and Dunn AK, "Cerebral blood flow imaging during neurosurgery with Laser Speckle Contrast Imaging", *OSA Biomedical Optics and 3D Imaging (BIOMED) Topical meeting, Miami, FL, April 11-14, 2010.*

- Best Poster Award

8. **Parthasarathy AB**, Ponticorvo A, S. M. Shams Kazmi, and Dunn AK, "Quantitative cerebral blood flow measurement through thinned Skull with Multi Exposure Speckle Imaging", *Frontiers in Optics, OSA Annual Meeting, San Jose, CA, October 11-15, 2009.*

- Finalist, Emil Wolf Best paper Award

9. **Parthasarathy AB**, Tom WJ, Gopal A, Zhang XJ, and Dunn AK, "Quantitative imaging of flow with Multi Exposure Speckle Contrast Imaging", *Gordon Research Conferences – Lasers in Medicine and Biology, Holderness, NH, July 20-25, 2008.*

10. **Parthasarathy AB,** Tom WJ, Gopal A, Zhang XJ, and Dunn AK, "Quantification of flow with Laser Speckle Contrast Imaging", *Engineering Conferences International – Advances in optics for biotechnology medicine and surgery, Naples, FL, June 10-14, 2007.*

11. **Parthasarathy AB,** Shin WG, Zhang XJ, and Dunn AK, "Laser speckle contrast imaging of flow in a micro fluidic device", *Biomedical applications of light scattering, SPIE Photonics West,* 2007.

12. Rao MM, **Parthasarathy AB**, Srinivasan D, Ramaswamy SA, "A Binasal airflow monitor", National Conference on Biomedical Engineering, NCBME, Biomedical Engineering Society of India, Vishakapatnam, India, Dec 23-35, 2004.

13. **Parthasarathy AB**, Srinivasan D, Ramaswamy SA, Thyagarajan S, "Parametric simulation of Heart Rate Variability", *IEEE National Conference on Biosignal, Communication and Networking, Chennai, India, 2004.*

14. **Parthasarathy AB**, Srinivasan D, Ramaswamy SA, Swaminathan V, Rao MM, "A real-time breathing monitoring system", *Indo-French workshop on brain asymmetries and vegetative states, Chennai, India, Apr 5, 2004.*

15. Ravindran N, **Parthasarathy AB**, "Quantifying fingerprints with fractal theory", *IEEE All India Students Congress, Sivakasi, India, Feb 5-7,* 2004.

PATENTS

Issued

1. Mertz J, Chu KK, **Parthasarathy AB**. "Partitioned Aperture Wavefront Imaging Method and System", US Patent 9091862.

Pending

2. Busch DR, **Parthasarathy AB**, Baker WB, Chandra M, Mesquita RC, Licht DJ, Yodh AG, Abramson K. "Pressure Modulation, Motion Detection, Individualized Geometry, and Improved Optic-Skin Coupling to Improve Long Term Clinical Monitoring with Diffuse Optics", US Provisional Application No. 62/091,064

3. Baker WB, Yodh AG, Busch DR, **Parthasarathy AB**, Mesquita RC, Chandra M. "Probes and Pressure Modulation Algorithms for Reducing Extratissue Contamination in Hemodynamic Measurement", US Provisional Application No. 62/091,048.

4. Dunn AK, **Parthasarathy AB**, Tom WJ. "Quantitative Imaging with Multi-Exposure Speckle Imaging (MESI), US Patent Application, 13/211,962,2011

RESEARCH EXPERIENCE

07/2014 - current	**American Heart Association Postdoctoral Fellow**, Dept. of Physics and Astronomy, University of Pennsylvania, Philadelphia, PA
08/2012 - current	**Postdoctoral Associate,** Dept. of Physics and Astronomy, University of Pennsylvania, Philadelphia, PA
08/2010 - 07/2012	**Postdoctoral Associate**, Dept. of Biomedical Engineering, Boston University, Boston, MA
06/2010 - 07/2010	**Postdoctoral Associate**, Dept. of Biomedical Engineering, The University of Texas at Austin, Austin, TX
10/2005 - 05/2010	**Graduate Research Assistant**, Dept. of Biomedical Engineering, The University of Texas at Austin, Austin, TX
05/2005	**Research Assistant**, International Institute of Information Technology, Pune, India
01/2004 - 01/2005	**Undergraduate Research Assistant**, Sri Ramachandra Medical College and Hospital, Chennai, India

TEACHING

@ University of South Florida, Tampa

2017	EEL 6935/4935: Biomedical Optical Imaging and Spectroscopy Electrical Engineering

@ University of Pennsylvania

2015, 2016	Guest lecture & Lab on “Diffuse Optical Spectroscopy”, BE 547: Fundamental Techniques of Imaging II, Bioengineering, (Instructor: Dr. Andrew Tsourkas)

@ The University of Teas at Austin

01/2009 - 05/2009 01/2010 - 05/2010	Graduate Teaching Assistant, BME355: “Probability and Statistics” (Recitation and Lab) Biomedical Engineering, (Instructor: Dr. Andrew Dunn)

OTHER EXPERIENCE, PROFESSIONAL MEMBERSHIP, SERVICE

Conference & Professional Service

2015	Session Chair, Optical Tomography and Spectroscopy of Tissue XI, SPIE Photonics West, BIOS
2009 - 2010	Secretary, Optical Society of America Student Chapter, The University of Texas at Austin, Austin, TX
2009 - 2010	Secretary, Society of Optical Engineers, Student Chapter, The University of Texas at Austin, Austin, TX
2009 - 2010	Founding member and Secretary, Biomedical Optics Graduates Organization, The University of Texas at Austin, Austin, TX

Professional Membership

Optical Society of America - OSA (since 2005), Optical Society of America Young Professionals program (since 2013), Society of Optical Engineers - SPIE (since 2005), Institute of Electrical and Electronics Engineers - IEEE (since 2013), American Heart Association - AHA (since 2013)

Grant & Journal Review

Ad-Hoc Grant Reviewer	Philadelphia Pediatric Medical Device Consortium (PPDC)
Grant reviewer	Optical Society of America (OSA) worldwide student and section activities
Review Editor	Frontiers in Brain Imaging methods, Frontiers in Neuroscience & Neurology
Journal Reviewer	Optics Letters, Optics Express, Journal of Biomedical Optics, Biomedical Optics Express, IEEE Transactions in Biomedical Engineering, Physics in Medicine and Biology, Medical & Biological Engineering & Computing

MENTORING

Sanghoon Chong	Graduate Student Intraoperative 3D imaging of tumor with Indo-Cyanine Green fluorescence (Conference talk, Manuscript in preparation)	2014 – 2016
Boping Xu	Graduate Student Quantitative measurement of cerebral oxygen gradients in rats during functional activation	2015 – 2016
Isaure de Kernier	Summer REU exchange student Intraoperative 3D imaging of tumor with Indo-Cyanine Green fluorescence	2015
Ross Gunderson	Summer RET exchange program Removal of motion artifacts from diffuse optical data	2015
Zhe Li	Visiting Graduate student Calibration of Diffuse Correlation Spectroscopy with venous occlusion Diffuse Optical Spectroscopy for skeletal muscle blood flow (Manuscript published) Detecting peripheral arterial disease with Diffuse Correlation Spectroscopy (Manuscript in preparation)	2014 – 2015
Detian Wang	Visiting Graduate Student Single tau software correlator for flow measurements with Diffuse Correlation Spectroscopy (Manuscript published)	2014 – 2015
Matthias Raba	Summer REU exchange student Monte Carlo simulation of Diffuse Correlation Spectroscopy in curved and layered geometries	2014
Anna Yesypenko	Summer High School research 3D computer aided modeling of fiber optic probes for cerebral monitoring	2013