

Dear Hiring Manager,

I am a PhD Candidate in the Biomedical Engineering department at the University of Alabama at Birmingham (UAB). I expect to defend my dissertation titled "Development of Multi-Shot Parameter Assessment by Retrieval from Signal Encoding (MS-PARSE) technique for higher resolution functional Magnetic Resonance Imaging and Clinical Applications" by December 2009. My dissertation project involves the development of a new, quantitative method to obtain multi-parameter, higher resolution estimates for functional MRI. This involved the pulse sequence design and programming of a non-cartesian trajectory, and modification, development and implementation of an iterative reconstruction technique using a conjugate gradient algorithm.

Currently, i am also involved in a clinical project that compares differences in patients with suspected Alzheimer's and mild cognitive impairment to normal controls. We use a carbon dioxide/diamox stress to test blood flow differences in resting and hypercapnic conditions using arterial spin labeling methods. My masters' project involved the quantification of cerebral blood flow maps in awake behaving non-human primates.

Additionally, i have completed the ILSE (Initiative for Life Sciences Entrepreneurship) certificate course from the UAB School of Business, during which i wrote a business plan for one of UAB's Research Foundation patent technologies, and took courses focusing on the pipeline from idea to IPO, writing business plans and term sheet negotiation techniques.

I aspire is to get involved in an area of research/development that has significant clinical impact. I believe my research and academic training have equipped me with skills that would allow me to make a positive contribution to your company.

Enclosed with this application is my resume. My website (www.rajivgmenon.com) has an expanded version of the resume. I would be glad to provide any other information and i thank you for your time and consideration.

Sincere Regards,
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OBJECTIVE

- To seek a challenging opportunity in MR Imaging Research/Development

SKILLS

- Strong MR Physics and Imaging background
- Pulse Sequence Design and Programming Skills
- Proficient in MATLAB, C, VnmrJ, LabVIEW, SPM, FreeSurfer
- Image reconstruction and processing techniques, fMRI data processing
- Strong work ethic and team player
- Excellent written and communication skills
- Grant Writing experience

EDUCATION

- **Ph.D. in Biomedical Engineering** *Expected Dec 09*
The University of Alabama at Birmingham (UAB), Birmingham, AL
Dissertation Title: Development of Multi Shot Higher Resolution 2D PARSE (Parameter Assessment by Retrieval from Signal Encoding) Technique for functional MRI (fMRI)
Advisor: Donald B Twieg, Ph.D.
- **MS in Biomedical Engineering** *Aug 03-Apr 07*
The University of Alabama at Birmingham (UAB), Birmingham, AL
Thesis Title: Regional Cerebral Blood Flow (rCBF) Calculations in Awake, Behaving Non-Human Primates Using Continuous Arterial Spin Labeling (CASL) Technique
Advisor: Donald B Twieg, Ph.D.
- **Initiative for Life Sciences Entrepreneurship (ILSE) certification** *Aug 05-Apr 07*
School of Business, UAB, Birmingham, AL
Mentor: David Anthony, 21 Ventures, LLC
- **B.E. (Bachelor of Engineering) – Electrical Engineering** *Aug 98–Jun 02*
The University of Pune, Pune, India

EXPERIENCE

Pulse Sequence Design and Programming

- Designed and implemented a Non-Cartesian Rosette Trajectory sequence on a 4.7T Varian system
- Designed and implementation of a perfusion imaging sequence on a 4.7T MR spectrometer using arterial spin labeling. Programmed the sequence in VnmrJ- the Varian programming platform
- Programmed a visual stimulus program that synchronizes the visual stimuli with data acquisition for an fMRI study
- Developed simulations to test the higher resolution PARSE technique for fMRI in MATLAB

Experiment Design

- Designed the simulations and experiments to test and verify the MSPARSE sequence
- Was responsible for experiment design with phantoms to test a newly implemented perfusion sequence
- Assisted in the experimental setup of clinical experiments in CASL fMRI

Experimentation

- Experience in conducted MRI tests on humans, and on phantoms-
- Tested the perfusion imaging sequence on macaque monkeys to calculate quantitative regional Cerebral Blood Flow (rCBF) maps—*Varian System 4.7T*

- Assisted with testing Diffusion imaging on phantoms and rats – *Bruker System 9.4T*

Reconstruction Techniques and Image Data Post-Processing

- Developed a novel conjugate gradient based MRI image reconstruction technique for higher resolution 2D PARSE
- Developed code in MATLAB for the calculation of rCBF maps by calculating a parametric map of perfusion values on a pixel by pixel basis
- fMRI data analysis using SPM, FSL

Teaching Experience

- Mentored an undergraduate honors research student
- Teaching assistant duties included grading term papers and teaching certain portions of the syllabus
- Tutored Math (Calculus) to student athletes at UAB

PUBLICATIONS/ABSTRACTS

- **Rajiv G Menon**, Donald B Twieg. “Development of a Multi-Shot PARSE (Parameter Assessment by Retrieval from Signal Encoding) Method for Higher Resolution fMRI.” *Frontiers in Biomedical Imaging Science Conference, Nashville, TN 2009 [Abstract selected for Poster and Podium Presentation at Young Investigators Symposium]*
- **Rajiv G Menon**, Donald B Twieg. “Development of a Multi-Shot PARSE Technique for higher resolution fMRI.” (*In preparation for Journal Submission*)
- **Rajiv G Menon**, DG Clark, KL Pearson, BD Corbitt, J den Hollander, G Deutsch. “Differentiating Parenchymal and Cerebrovascular disease components in dementia using CASL MRI with a Rest-Stress Paradigm” *Organization for Human Brain Mapping (OHBM), San Francisco, CA 2009*
- Georg Deutsch, Janis P O’Malley, **Rajiv G Menon**, Victor W Mark, Beverly D Corbitt, Hong-Gang Liu, Jan den Hollander, James H Halsey. “Separating Recoverable and Permanent Damage Post Stroke with CASL fMRI Stress Testing and 18-FDG PET”. *BRAIN 2009: International Symposium on Cerebral Blood Flow, Metabolism and Function, Chicago, USA*
- Georg Deutsch, David G Clark, Amol Pednekar, **Rajiv G Menon**, Beverly D Corbitt, Jan den Hollander. “Identifying Cerebrovascular Versus Parenchymal Disease Components in Dementia with Rest-Stress CASL MRI”. *International Society for Magnetic Resonance in Medicine (ISMRM), Hawaii, 2009*
- **Rajiv G Menon**, Matthew K Ward, Paul D Gamlin, Edward G Walsh, Donald B Twieg. “Regional Cerebral Blood Flow (rCBF) Calculations in Awake, Behaving Non-Human Primates Using Continuous Arterial Spin Labeling (CASL) Technique” (*In preparation for Journal Submission*)
- **Rajiv G Menon**, Matthew K Ward, Mark A Bolding, Hrishikesh D Deshpande, Paul D Gamlin, Edward G Walsh, Donald B Twieg. “Cerebral Blood Flow Calculations in Awake, Behaving Non-Human Primates using the Continuous Arterial Spin Labeling (CASL) Technique.” *Biomedical Engineering Society (BMES) Conference, Los Angeles, CA, 2007*

INVITED TALKS & PRESENTATIONS

- *Invited Talks*
 - *Young Investigators Symposium at Frontiers in Biomedical Imaging Science, Vanderbilt University, Nashville.* Development of a Multi-Shot PARSE (Parameter Assessment by Retrieval from Signal Encoding) Method for Higher Resolution fMRI. June 4, 2009
 - *Neuro-Radiology Morning Conference on ASL Methods, UAB* Non-Invasive Measurement of Perfusion: A Review of Arterial Spin Labeling (ASL) Techniques. December 9, 2007
- MS-PARSE: Exploring new Magnetic Resonance Imaging Techniques. *Graduate Student Research Days 2008, UAB, (Feb 29, 2008)*
- Regional Cerebral Blood Flow (rCBF) Calculations in Non-Human Primates using Continuous Arterial Spin Labeling (CASL) Technique. *Graduate Student Research Days 2006, UAB (March 2, 2006)*

AWARDS/HONORS

- **2009**
 - Recognized for excellence at the Young Investigators Symposium, Frontiers in Biomedical Imaging Science Conference, Nashville (June 09)
 - Student Member of the Graduate Student Association Advisory Committee (GSAAC)-(Aug 06- Present)
 - Graduate Fellowship in Biomedical Engineering - (Aug 03- Present)
- **2007**
 - Nominated for UAB International Scholars and Students' Outstanding Achievement Award
- **2006**
 - President of the Association of Indian Students (AIS) at UAB, a 300 member strong international student campus organization. The organization was awarded the Outstanding International Student Organization Award by UAB during my tenure as President – (Apr 06- Apr 07)
 - Won First Prize at Graduate Student Research Days 2006 (March 06)
 - Travel Award to attend 14th ISMRM Meeting and Exhibition in Seattle, WA (May 5-12, 06)
 - Member of the UAB Industry Round Table Committee (Aug 06- Jun 07)
- **2005**
 - Member of the core team of SATRF (South Asian Tsunami Relief Fund), that was awarded the Global Citizenship Awards by UAB in recognition for raising \$21000 towards tsunami relief efforts (Jan 05)
- **2003-04**
 - Senator in the Graduate Students Association (GSA) - (Aug 03-04)

RELEVANT COURSES

- **MR Physics:** MRI, Advanced MRI and fMRI, Special Topics in MR Engineering
- **Image Processing:** Introduction to Medical Imaging, Medical Image Processing
- **Math:** Random Variables and Stochastic Processes, Engineering Analysis, Bio-Statistics
- **Physiology:** Advanced Behavioral Neuroscience, Integrative Neuroscience, Cell Physiology I, II

REFERENCES

- **DONALD B TWIEG, PhD**
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