

Rajkumar Nallour Raveendran

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CURRENT POSITION

Envision Research Institute, Wichita
Postdoctoral Fellow

Wichita, KS
August 2017-present

EDUCATION

University of Waterloo
PhD, Vision Science
Dissertation: Binocular vision and fixational eye movements

Waterloo, Ontario, Canada
October, 2017

University of Waterloo
MSc, Vision Science
Dissertation: Fixational eye movements in strabismic amblyopia

Waterloo, Ontario, Canada
October, 2013

Elite School of Optometry
BS, Optometry

Chennai, India
August, 2009

AFFILIATED POSITIONS

Wichita State University
Visiting Research Scientist, Dept. of Computer Engineering

Wichita, KS
October 2018-present

University of Waterloo
Visiting Scholar, School of Optometry & Vision Science

Waterloo, Ontario, Canada
August 2017-present

RESEARCH EXPERIENCE

Postdoctoral Fellow; Mentor: Dr. Ben Thompson

- Transcranial electrical stimulation and visual rehabilitation in people with central vision loss
- Relationship between fixational eye movements and visual crowding in central and peripheral vision.

Ph.D.; Advisors: Dr. Ben Thompson & Dr. Bill Bobier

- Effect of monocular vs. binocular viewing on fixational eye movements
- Effect of binocular interaction on fixational eye movements
- Relationship between reduced visual acuity and impaired fixation stability in amblyopia

- Fast Fourier transform analysis on fixational eye movements of control and amblyopic participants

M.Sc.; Advisor: Dr. Bill Bobier

- Fixational eye movements in strabismic amblyopia
- Disparity vergence in strabismic amblyopia

Researches involved other than thesis

- A randomized clinical trial for binocular treatment of amblyopia (BRAVO)
- Role of interocular suppression in the latency of saccadic eye movements in amblyopia.
- Sensitivity analysis of mathematical model of ocular accommodation & vergence
- Worth 4 dot test and its relationship with stereo-acuity.
- Development of disparity vergence: how infants deal with disparity before the development of disparity vergence

Publications

As a main contributor

1. Raveendran, R. N., Bobier, W., & Thompson, B. (2019). Binocular vision and fixational eye movements. *Journal of Vision (2019) 19(4):9, 1–15.*
2. Raveendran, R. N., Bobier, W., & Thompson, B. (2019). Reduced amblyopic eye fixation stability cannot be simulated using retinal-defocus-induced reductions in visual acuity. *Vision Research, 154*, 14–20.
3. Raveendran, R. N., Babu, R. J., Hess, R. F., & Bobier, W. R. (2014). Transient improvements in fixational stability in strabismic amblyopes following bifoveal fixation and reduced interocular suppression. *Ophthalmic & Physiological Optics, 34*, 214–225.

Under review/preparation

1. Raveendran, R. N., Tsang, K., Tiwana, D., & Thompson, B. Anodal direct current stimulation reduces collinear lateral inhibition in normal peripheral vision (under peer-review in Scientific Reports)
2. Raveendran, R. N., Krishnan, A., Thompson, B. Relationship between visual crowding and fixational eye movements in central and peripheral vision. (in preparation to submit to PLOS-one)
3. Erkelens, I., Raveendran, R. N., Babu, R. J., & Thompson, B. Role of interocular suppression in increased saccadic latency in amblyopia. (in preparation to submit to IOVS).

As a collaborator

1. Guo C. X, Babu, R.J, Black JM, et al. and BRAVO study team (2016). Binocular treatment of amblyopia using videogames (BRAVO): study protocol for a randomised controlled trial. *Trials 17:504.*

2. Gao, T. Y., Guo, C. X., Babu, R. J., Black, J. M., Bobier, W. R., Chakraborty, A., ... Boswell, S. J. (2018). Effectiveness of a binocular video game vs placebo video game for improving visual functions in older children, teenagers, and adults with amblyopia: A randomized clinical trial. *JAMA Ophthalmology*, 136(2).
3. Gao, T. Y., Anstice, N., Babu, R. J., Black, J. M., Bobier, W. R., Dai, S., ... Thompson, B. (2018). Optical treatment of amblyopia in older children and adults is essential prior to enrolment in a clinical trial. *Ophthalmic and Physiological Optics*, 38(2), 129–143.

Conference presentations:

1. Anodal transcranial direct stimulation reduces crowding in normal peripheral vision – oral presentation at Association for research in vision and ophthalmology (ARVO) – 2019, Vancouver, BC, Canada. **Rajkumar Raveendran**, *Katelyn Tsang, Dilraj Tiwana, Benjamin Thompson*.
2. Reduced fixation stability during a peripheral orientation discrimination task in participants with normal vision – *poster presentation* at Association for research in vision and ophthalmology (ARVO) – 2018, Honolulu, HI, USA. **Rajkumar Raveendran**, *Arun Kumar Krishnan, Benjamin Thompson*.
3. Impaired fixation stability in amblyopia cannot be explained by the visual acuity impairment. Oral presentation: presented at OSA Fall vision meeting 2016, Rochester, USA. **Rajkumar Raveendran**, *William R Bobier, Benjamin Thompson*.
4. Suppression on the Worth 4 dot test and its relationship to stereo acuity. American Academy of Optometry (AAO) Annual meeting, Anaheim, USA. October 2016. Rajju Babu, **Rajkumar Nallour Raveendran** and the BRAVO team,
5. Interocular contrast differences and the stability of fixational eye movements – *poster presentation* at Association for research in vision and ophthalmology (ARVO) – 2016, Seattle, USA. **Rajkumar Raveendran**, *William R Bobier, Rajju J Babu, Benjamin Thompson*.
6. Saccadic eye movement latencies in adults with amblyopia: the role of suppression. American Academy of Optometry (AAO) Annual meeting, New Orleans, Louisiana, USA. October 2015. Rajju Babu, **Rajkumar Nallour Raveendran**, Ian Erkelens, Amy Chow, William R Bobier, Benjamin Thompson.
7. Fixational eye movements during binocular rivalry – *poster presentation* at Association for research in vision and ophthalmology (ARVO) – 2015, Denver, USA. **Rajkumar Raveendran**, *William R Bobier, Amy Chow, Rajju J Babu, Benjamin Thompson*.
8. Effect of interocular suppression in the stability of fixation – *oral presentation* at Graduate Student Research Conference (GSRC) (2013). **Rajkumar Raveendran**, *William R Bobier, Amy Chow, Rajju J Babu, Benjamin Thompson*.
9. Can Suppression explain reduced fixation stability in strabismic amblyopia? - *poster presentation* at Canadian Optometric School Research Conference (2014), University of Waterloo, ON, Canada. **Rajkumar Nallour Raveendran**, *Rajju Babu, Robert Hess, William Bobier*.
10. Fixational eye movements in strabismic amblyopia - *poster presentation* at Interactions of Vision, CVR (2013), York University, ON, Canada. **Rajkumar Nallour Raveendran**, *Rajju Babu, Robert Hess, William Bobier*.

11. Microsaccades in Strabismic Amblyopes with Ocular Alignment and Binocular Summation – *oral presentation* at Child Vision Research Society (2013), Waterloo, **Rajkumar Nallour Raveendran, Raiju Babu, William Bobier.**
12. Ocular alignment changes microsaccadic amplitudes in strabismic amblyopes - presented (*Oral*) in Graduate Student Research Conference (GSRC) (2013). **Rajkumar Raveendran, Raiju J Babu, William Bobier.**
13. Improvement of fixational stability in strabismic amblyopia with ocular alignment and binocular summation, *poster presentation* at Association for research in vision and ophthalmology (ARVO) – 2013, Seattle, USA. **Rajkumar Nallour Raveendran, Raiju Babu, Robert F Hess, William Bobier.**
14. Sensitivity analysis of Schor’s model of accommodation-vergence – *poster presentation* at OSA Fall Vision Meeting (2012), Rochester. **Rajkumar Nallour Raveendran, William Bobier, Vasudevan Lakshminarayanan.**
15. Achieving bifoveal fixation in strabismus – presented (*Oral*) in Graduate Student Research Conference (GSRC) (2012). **Rajkumar Raveendran, William Bobier.**
16. Fresnel prisms and its application – a retrospective study – *Poster* presented in the 8th Dr. E. Vaidhyalingam Memorial Scientific Session (2009). **Ayisha Atiya, Rajkumar NR, Arun Kumar K.**
17. Construction and validation of new screening chart for amblyopia – *Poster* presented at All India Optometry Conference, Amritsar (2008). **Monica R, Rajkumar NR, Sakunthala P.**
18. Validation of 6/9 logMAR vision screening chart – presented (*Oral*) at the 7th Dr. E. Vaidhyalingam Memorial Scientific Session. (2008). **Rajkumar NR, Monica R, Sakunthala P, Sarika G.**

GRANTS, AWARDS & ACHIEVEMENTS

- **LC Industries Postdoctoral Research fellowship** – 2017 to 2019
- Awarded “**Doctoral thesis completion award**” by the Faculty of Science, University of Waterloo.
- **Canadian Optometric Education Trust Fund (COETF)** – 2013, 2014, 2015, 2016. And awarded with \$1500 for my research in “Eye movements in strabismus”. For the year 2016, I was awarded \$1000 for my research in “Effect of binocular interaction in fixational stability”
- University of Waterloo – **Special Graduate Award** – 2011, 2013 for academic excellence
- University of Waterloo - **Graduate Award** – 2011, 2012, 2013, 2015, 2016 for academic excellence
- Awarded “**Best Student Award**” for the academic year 2006 – 2007.
- **Winner** of Transitions – All India Optometry Quiz (National Level), 2008
- **Winner** of Transitions - All India Optometry Quiz (South zone), 2008.

Clinical Experience:

- ✓ Done internship for one year as a part of four-year optometry course at Sankara Nethralaya, a tertiary eye care center and gained experience in various fields like Pediatrics, Geriatrics, Glaucoma, Uvea, Low Vision, Orthoptics, Contact Lens and various diagnostics like HVF, OCT, ERG, VEP, EOG, Microperimeter etc.

- ✓ Worked as an Optometrist at Sankara Nethralaya, Chennai, in the department of Glaucoma and Neuro-Ophthalmology from August 2009 – August 2010.

Other Professional/Social activities

- ✓ As a grad student representative, I organized Vision Science Seminar Series (VSRSS) for the academic year of 2014-2015
- ✓ Arranged funds for many social activities as the Treasurer of Rotaract Club of Elite School of Optometry for two years 2007 – 2009.
- ✓ Served people as the member of Junior Red Cross (JRC) for four years.
- ✓ Volunteered Golf Tournament for blind and visually impaired organized by Envision Inc.