

Gaurav Kharkwal

CONTACT INFORMATION	http://gkharkwal.github.io gaurav.kharkwal@gmail.com	
WORK EXPERIENCE	Bloomberg LP , New York, NY <i>UI Infrastructure Developer</i> Aug 2014 - Present <ul style="list-style-type: none">Developed and maintained client-side applications and services for the Bloomberg Terminal.Developed and maintained UI framework/widgets used by app-developers to write front-end code. Rutgers University , New Brunswick, NJ <i>Web Developer</i> , Dept. of Psychology Sept 2011 - Sept 2013 <ul style="list-style-type: none">Developed a website using PHP for running behavioral experiments as part of an online lab course.Coded experiments as Java applets, which additionally collected and parsed data.Wrote detailed user-guides and teaching aids for the online course. Microsoft, India Development Center <i>Software Development Engineer - Intern</i> Apr 2008 - Jul 2008 <ul style="list-style-type: none">Worked with the Visual Studio Test Professional team to develop a framework for bug reporting.System allowed creation of test cases out of existing bugs and vice versa.Created a UI using WPF and XAML to facilitate bug reporting.	
TECHNICAL SKILLS	Programming Languages: <ul style="list-style-type: none">C++, Javascript, PythonPrior experience in: Java, PHP, MySQL Statistical Languages: <ul style="list-style-type: none">R, MATLAB, SPSS, Excel	
EDUCATION	Rutgers University , New Brunswick, NJ Ph.D., Cognitive Psychology (GPA: 4.0) 2014 M.S., Computer Science (GPA: 4.0) 2014 M.S., Cognitive Psychology (GPA: 4.0) 2011 <ul style="list-style-type: none">Awarded the Excellence in Dissertation Fellowship in the academic year 2013-2014.Authored and co-authored publications in peer-reviewed journals.Presented research findings as talks and posters to peers in competitive academic conferences. International Institute of Information Technology , Hyderabad, India B.Tech., Computer Science and Engineering <i>Hons.</i> (GPA: 9.04/10) 2009 <ul style="list-style-type: none">Included in the Dean's List every year from 2005 to 2009 for excellence in academic performance.Ranked in the top 10 of the graduating class of 2009 for achieving academic distinction.	
RELEVANT COURSEWORK	<ul style="list-style-type: none">Research Design & AnalysisModel Testing & Probabilistic InferenceData Structures & AlgorithmsNumerical AnalysisPrinciples of Artificial IntelligenceMachine LearningNatural Language ProcessingLanguage & Information	
RELEVANT PROJECTS	Syntactic Complexity as a Feature for Automatic Essay Scoring <i>Course Project</i> , Spring '13 <ul style="list-style-type: none">Evaluated syntactic complexity as a feature for automated essay scoring using 12,000 TOEFL essays.Quantified syntactic complexity as processing difficulty during reading with a psycholinguistic model called <i>surprisal</i>.Obtained processing complexity per word for every essay using a parser trained on WSJ corpus.Extracted and organized data using Python, and analyzed them by performing correlation tests and building classification models on R.Found significant inverse correlation indicating simpler sentences are linked with better essay scores.Presented findings at an ACL workshop.	

Ontology-based Semantic Parsing

MS in CS, 2012 - 2013

- Created a semantic parser using a constraint-based grammatical framework to produce ontological meaning representations for given sentences.
- Developed an NLTK-inspired grammar module and a bottom-up chart parser in Python.
- Compared parser with an equivalent CFG parser by collecting performance statistics and analyzing them via linear mixed-effects regression models.
- Code available at: github.com/gkharkwal/LWFGParser

Human Sentence Processing with Word-level Noise

PhD in Cog Psych, 2011 - 2014

- Investigated how people comprehend sentences containing unknown words.
- Developed web-based and offline experiments from scratch using Python, PHP, and Java.
- Cleaned and analyzed data using Python, R, and MATLAB.
- Developed Bayesian models of sentence processing that integrated noisy word recognition by performing corpus analysis on large-scale textual data.
- Discovered influence of prior grammatical information on comprehension of unknown words.

Linguistic Representations of Visual Events

MS in Cog Psych, 2009 - 2011

- Evaluated two theories of human language comprehension by developing a new experimental paradigm.
- Used Python to create experimental stimuli from scratch and to collect and parse data.
- Analyzed data with traditional and Bayesian techniques using R and MATLAB.

LEADERSHIP EXPERIENCE

Rutgers University, New Brunswick, NJ

Research Mentor

Sept 2009 - June 2014

- Advised and mentored undergraduate students on research projects.
- Guided them through various stages of research, including project conception, data collection, data analysis, and presentation of results.

Teaching Assistant

Sept 2009 - Sept 2013

- Conducted lab sessions for *Sensation & Perception* and *Cognition* courses for groups of 20 students.
- Supervised students in final projects, and graded weekly assignments.
- Obtained TA certificate for *Teaching with Technology*.

International Institute of Information Technology, Hyderabad, India

Teaching Assistant

Aug 2007 - May 2009

- Organized and evaluated lab sessions on *Data Structures & Algorithms* where 30 students coded solutions to algorithmic problems.
- Led weekly recitation sessions with groups of 50-150 students for the following courses: *Digital Logic Design*, *Networks*, and *Database Mgmt Systems*.

PUBLICATIONS

Kharkwal, G. and Muresan, S. (2014). "Surprisal as a Predictor of Essay Quality." *The 9th Workshop on Innovative Use of NLP for Building Educational Applications at ACL*, 54-60, Baltimore, MD.

Kharkwal, G. and Stromswold, K. (2014). "Good-enough language processing: Evidence from sentence-video matching." *Journal of Psycholinguistic Research*, 43(1), 27-43. doi:10.1007/s10936-013-9239-5.

Lee, C., **Kharkwal, G.**, and Stromswold, K. (2012). "Temporal transitions in narrative production with wordless picture books." *LSA Annual Meeting Extended Abstracts*, elanguage.net.