

# Aaron M. Mueller

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RESEARCH INTERESTS	<ul style="list-style-type: none"> <li>• Machine translation</li> <li>• Endangered and low-resource language varieties</li> <li>• Syntax/semantics interface</li> <li>• Pragmatics and sociolinguistics</li> </ul>	
EDUCATION	<p><b>Johns Hopkins University</b>, Baltimore, MD</p> <p>Ph.D. student, Computer Science (Whiting School of Engineering). <b>August 2018 - Present</b>  M.S.E., Computer Science (Whiting School of Engineering). Expected <b>May 2020</b>  <i>Affiliation:</i> Center for Language and Speech Processing.  <i>Advisor:</i> David Yarowsky.</p> <p><b>University of Kentucky</b>, Lexington, KY</p> <p>B.S., Computer Science (College of Engineering). Honors. <b>May 2018</b>  B.S., Linguistics (College of Arts &amp; Sciences), Honors. <b>May 2018</b>  GPA: 4.0. <i>Summa cum laude</i>.  <i>Thesis:</i> Neural Machine Translation for Canadian French.  <i>Advisors:</i> Ramakanth Kavuluru, Mark Richard Lauersdorf.</p>	
RESEARCH EXPERIENCE	<p><b>University of Kentucky</b>, Lexington, KY</p> <p><b>Institutional Research &amp; Advanced Analytics</b></p> <p><i>Research Assistant</i> <b>May 2018 - August 2018</b></p> <p>Supervisors: Nathan Jacobs, Craig Rudick</p> <ul style="list-style-type: none"> <li>– Designed a system that, given a student’s prior performance, predicts their future grades course-by-course.</li> <li>– Employed deep LSTMs and NLP techniques (e.g., learning word embeddings on course descriptions) to learn student and course profiles.</li> <li>– Designed an ordinal loss function that observed how close the prediction was to the real grade.</li> </ul> <p><b>University of Massachusetts Amherst</b>, Amherst, MA</p> <p><b>Statistical Social Language Analysis Lab</b></p> <p><i>Research Assistant</i> <b>May 2017 - August 2017</b></p> <p>Supervisor: Brendan O’Connor</p> <ul style="list-style-type: none"> <li>– Collaborated with graduate students and faculty to improve an entity-event extraction system.</li> <li>– Given news articles, used distant supervision to extract the names of American citizens who have been killed by police.</li> <li>– Integrated entity mention and relation systems into pre-existing sentence-level model.</li> <li>– Integrated document-level information (e.g., noun coreference) as features to improve our system.</li> </ul> <p><b>University of Kentucky</b>, Lexington, KY</p> <p><b>Linguistics Department</b></p> <p><i>Juried Project</i> <b>August 2016 - May 2017</b></p> <p>Jurors: Hilaria Cruz, Raphael Finkel, Phil Harling</p> <ul style="list-style-type: none"> <li>– Preservation and revitalization project for a low-resource indigenous language—Chatino—spoken natively by approximately 40,000 individuals.</li> <li>– Trained an automatic speech recognition system with Sphinx.</li> <li>– Promoted and created Chatino language-learning resources, including open-source speech data, a speech corpus, and a website.</li> </ul>	

	<p><i>Directed Independent Research</i> <span style="float: right;"><b>September 2015 - May 2016</b></span></p> <p>Supervisor: Mark Richard Lauersdorf</p> <ul style="list-style-type: none"> <li>– Explored the manner in which societal perceptions and opinions of gender and LGBT communities are expressed linguistically.</li> <li>– Applied corpus-based statistical methods to the analysis of diachronic sociolinguistic data.</li> </ul> <p><b>Johns Hopkins University</b>, Baltimore, MD  <b>Center for Language &amp; Speech Processing</b>  <i>Research Assistant</i> <span style="float: right;"><b>May 2016 - August 2016</b></span></p> <p>Supervisor: David Yarowsky</p> <ul style="list-style-type: none"> <li>– Collaborated with undergraduate and graduate students, post-doctoral researchers, and faculty to create automatic translation systems for low-resource languages.</li> <li>– Assisted in the creation of a lemma-based English-Uyghur translation model.</li> <li>– Built a morphological generator for Crimean Tatar.</li> <li>– Created parsers to extract translation tables from foreign editions of Wiktionary.</li> <li>– Funded by DARPA's Low-Resource Languages for Emergent Incidents (LORELEI) program.</li> </ul>
FELLOWSHIPS AND AWARDS	<p><i>National Science Foundation Graduate Fellow</i> <span style="float: right;"><b>2018 - 2023</b></span></p> <p><i>Gaines Fellow</i> <span style="float: right;"><b>2016 - 2018</b></span></p> <p>Two-year fellowship awarded to undergraduates with outstanding academic performance, demonstrated ability to conduct undergraduate research, an interest in public issues, and a desire to enhance understanding of the human condition through the humanities. Requires the completion of a juried project, a major thesis project, and a seminar in the humanities. (\$5,000)</p> <p><i>Patterson Scholar</i> <span style="float: right;"><b>2014 - 2018</b></span></p> <p>Granted to University of Kentucky students who have earned National Merit Finalist standing and who maintain a 3.300 cumulative GPA. (\$80,000+)</p> <p><i>Raymond F. Betts Scholar</i> <span style="float: right;"><b>2017</b></span></p> <p>Awarded to rising seniors conducting thesis research, especially if travel is necessary. Used funds to study Québec French and in Montréal and Québec City during winter of 2017–2018. (\$2,500)</p> <p><i>Goldwater Scholarship (Honorable Mention)</i> <span style="float: right;"><b>2017</b></span></p> <p><i>Phi Beta Kappa</i> <span style="float: right;"><b>2017</b></span></p> <p><i>National Merit Scholar</i> <span style="float: right;"><b>2014</b></span></p>
SELECTED PRESENTATIONS	<p>Mueller, Aaron; Keith, Katherine; Handler, Abe; Blodgett, Su Lin; and O'Connor, Brendan. The Identification of Civilians Killed by Police with Supervised Entity-Event Extraction. <i>2017 UMass Amherst Research Experience for Undergraduates (REU) Showcase</i>, Amherst, MA, August 9, 2017.</p> <p>Mueller, Aaron; Finkel, Raphael; and Cruz, Hilaria. Documenting and Promoting the Chatino Language and Orthography. <i>Juried Presentation in Satisfaction of the Requirements of the Gaines Fellowship</i>, Lexington, KY, February 21, 2017.</p> <p>Mueller, Aaron. A Lemma-Based Approach for English-Uyghur Statistical Machine Translation. <i>9th Annual Conference of the Illinois Language and Linguistics Society (ILLS9)</i>, Urbana, IL, March 31–April 1, 2017.</p> <p>Mueller, Aaron. Lexical and Semantic Shifts in the Linguistic Construction of Social Gender: A Corpus-Based Analysis of Written U.S. English. Poster. <i>9th Annual Toronto Undergraduate Linguistics Conference (TULCON9)</i>, Toronto, ON, March 4–6, 2016.</p>
ADDITIONAL EXPERIENCE	<p><b>Chellgren Center for Undergraduate Excellence</b>, Lexington, KY  <i>Student Outreach Team</i> <span style="float: right;"><b>August 2017 - May 2018</b></span></p> <ul style="list-style-type: none"> <li>– Promoted the Office of Undergraduate Research and the Chellgren Fellowship.</li> <li>– Organized panel discussions, workshops, and lectures on abstract writing, research poster design, and academic presentations.</li> <li>– Led the review committee for our Showcase of Undergraduate Scholars, an annual conference where University of Kentucky undergraduates present their research to other students and faculty.</li> </ul>

	<b>UK Special Collections Research Center</b> , Lexington, KY <i>Archiving Intern</i> <b>September 2015 - May 2016</b> <ul style="list-style-type: none"> <li>– Created a diachronic corpus of Lexingtonian architectural documentation which includes zoning ordinances and Lexington Planning Committee meeting minutes.</li> <li>– Made accessible an archival collection that highlights Lexington’s architectural history.</li> <li>– Cooperated on a multiformat project that layered GIS technology, city government data, archival photos, and digital humanities tools.</li> </ul>
VOLUNTEER SERVICE	<b>Amnesty International</b> <b>2012 - Present</b> <ul style="list-style-type: none"> <li>– International organization dedicated to the protection of human rights worldwide.</li> <li>– Member of Amnesty International at Johns Hopkins and Washington, D.C.</li> <li>– <i>Founder</i> and former <i>Co-President</i> of Amnesty International at the University of Kentucky.</li> <li>– Organize fundraisers and informational events: concerts featuring local bands, panel discussions on contemporary issues, faculty debates, petitions, protests, and more.</li> <li>– Attendee at Amnesty’s national Human Rights Conference.</li> </ul>
	<b>Oxfam International</b> <b>2014 - Present</b> <ul style="list-style-type: none"> <li>– International organization dedicated to poverty eradication, disaster relief, and political advocacy for those facing harsh living conditions and injustice worldwide.</li> <li>– Member of Oxfam in Washington, D.C.</li> <li>– <i>Founder</i> and former <i>Co-Coordinator</i> of Oxfam at the University of Kentucky.</li> <li>– Plan awareness-raising, fundraising, and petitioning events for Oxfam’s GROW campaign with a distinct focus on food inequality in impoverished and war-stricken countries.</li> </ul>
	<b>Society for the Promotion of Undergraduate Research</b> <b>2014 - 2017</b> <ul style="list-style-type: none"> <li>– University-of-Kentucky-based organization founded to assist undergraduates in finding research opportunities and in bettering their research.</li> <li>– <i>Co-President</i> and former <i>Director of Events</i>.</li> <li>– Plan and execute the Showcase of Undergraduate Scholars.</li> <li>– Plan research workshops to help undergraduates improve their abstracts, presentations, and papers.</li> <li>– Organize faculty panel discussions, promotional events, and information sessions on getting involved in undergraduate research and on scholarship and summer research opportunities.</li> <li>– Merged with the Student Outreach Team in May 2017 (joined upon merge).</li> </ul>
COMPUTING SKILLS	Computer Programming: <ul style="list-style-type: none"> <li>– Languages: Python, C, C++, Java, HTML, CSS, Javascript, MATLAB, R, UNIX shell scripting, GNU make.</li> <li>– Development Environments: Vim, Emacs, Eclipse.</li> <li>– Version Control: DVCS (Git, Bitbucket).</li> <li>– Machine Learning Toolkits: TensorFlow, Sockeye, Keras, PyTorch, OpenNMT.</li> <li>– Operating Systems: Linux (Debian, Ubuntu, CentOS, Arch), Microsoft Windows family, macOS, Android, iOS.</li> </ul> Linguistic Tools: <ul style="list-style-type: none"> <li>– Praat, AntConc, QGIS, Audacity.</li> </ul> Desktop Editing and Productivity Software: <ul style="list-style-type: none"> <li>– T<sub>E</sub>X (L<sup>A</sup>T<sub>E</sub>X, B<sub>I</sub>B<sub>T</sub>E<sub>X</sub>).</li> <li>– GIMP, Inkscape.</li> <li>– Microsoft Office, OpenOffice.org, LibreOffice, G Suite.</li> </ul>
LANGUAGES	Fluent in English and French (Québec). Rudimentary Inuktitut and Dutch. Experience with San Juan Quiahije Chatino, Uyghur, and Crimean Tatar through research.
INTERESTS AND HOBBIES	<ul style="list-style-type: none"> <li>– Music: guitar (acoustic, classical, electric), bass, banjo, synthesizer, MaxMSP, Ableton Live.</li> <li>– Athletics: contra, swing dance, cold-weather hiking.</li> <li>– Hobbies: natural language learning, reading (philosophy, politics), city exploration.</li> <li>– Cooking: Thai, French, German, Southern.</li> </ul>