

# Matthew Byrd

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byrdofafeather.github.io

## Education

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<b>Chapel Hill, NC</b>	<b>University of North Carolina at Chapel Hill</b>	<b>Fall 2018 – Fall 2021</b>
<ul style="list-style-type: none"><li>• M.S. in Computer Science December 2022.</li><li>• B.S. in Computer Science &amp; Mathematics December 2021. GPA: 3.6</li></ul>		

## Publications

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- [1] Matthew Byrd and Shashank Srivastava. “Predicting Difficulty and Discrimination of Natural Language Questions”. In: *Proceedings of the 60th Annual Meeting of the Association for Computational Linguistics*. Dublin, Ireland: Association for Computational Linguistics, May 2022.
- [2] Matthew A Byrd and Tyson Hedrick. “2D and 3D video digitizing with a web browser”. In: *Society for Integrative and Comparative Biology 2021 Virtual Annual Meeting (VAM)* (2021).

## Experience

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<b>Web Developer, Lead</b>	<b>Caktus Group</b>	<b>Jan. 2022 – Present</b>
<ul style="list-style-type: none"><li>• Technical lead (3-person team) on a SAAS integration contract for a Django based security application.</li><li>• Responsible for 9 modules consisting of querying API data, storing it, and testing each aspect rigorously.</li><li>• Personally built 4 modules, each module adding value to our client’s platform. Assisted in remaining modules.</li></ul> <p><i>Technologies: Python, Django, Docker, AWS, REST API, Git</i></p>		

<b>Research Assistant</b>	<b>University of North Carolina at Chapel Hill</b>	<b>May 2020 – Present</b>
<ul style="list-style-type: none"><li>• First author on a paper [1] published and selected for oral presentation in top NLP conference <i>ACL</i>.</li><li>• Developed a way to quantify and predict the difficulty of questions; useful for question answering research.</li><li>• As part of research, trained multiple SOTA question answering models distributed across 4 GPUs.</li><li>• Developed a rigorously tested pipeline for classifying medical data, to be utilized in UNC hospitals.</li></ul> <p><i>Technologies: Python, Torch, Sklearn, Transformers, Spacy, NLTK, Natural Language Processing, BERT</i></p>		

<b>Research Programmer</b>	<b>University of North Carolina at Chapel Hill</b>	<b>Aug. 2019 – Dec. 2021</b>
<ul style="list-style-type: none"><li>• Integrated pre-trained computer vision models to assist in automated video analysis using tensorflow.js.</li><li>• Sole author of web-based video analysis tools now used by UNC lab in biological research.</li><li>• Published technical contribution to biology community [2].</li></ul> <p><i>Technologies: Python, Django, Javascript, Computer Vision, Tensorflow, Tensorflowjs, HTML, CSS, Git</i></p>		

<b>Accessible Web Developer</b>	<b>University of North Carolina at Chapel Hill</b>	<b>Aug. 2018 – May 2019</b>
<ul style="list-style-type: none"><li>• Developed an automated video editor using Python, OpenCV, and NodeJS, which allowed for the automatic creation of accessible video games.</li><li>• Used C++ to create multi-threaded Python bindings, decreasing processing time by 50%.</li></ul>		

## Projects

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- **Kaggle** (2022–Present). Built large language model classifiers to determine quality of student essays.
  - **Liber** (2020). Mobile app used to catalog large personal libraries. Queries OpenBooks API to support barcode scanning. Built with Flutter, Django.
  - **NARC** (2018-2019). Machine learning based academic fraud detection system with 90+ downloads.

### **Additional Experience and Awards**

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- **Second Place, Hack Duke:** Awarded 2nd place for a novel learning management system concept, out of 32 projects.
- **ESL Volunteer:** Read with ESL children to help increase childhood literacy in local area - recognized by county board for contribution.