

# Caleb James Smith

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## Summary

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Software developer and data scientist specialized in automation and data processing, visualization, and analysis. Ten years of experience in particle physics research as a collaborator on the Compact Muon Solenoid (CMS) experiment. Experienced, persistent, and creative problem solver. Hardworking team player. Curious learner, researcher, and teacher.

## Technical Strengths

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<b>Languages</b>	Python, C++, Bash, HTML, CSS
<b>Libraries</b>	Matplotlib, NumPy, Pandas, Flask, Django, ROOT
<b>Tools</b>	Unix/Linux Terminal, VS Code, Vim, Git, JSON, XML, Markdown, L <sup>A</sup> T <sub>E</sub> X

## Work Experience

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<b>AI Evaluator (Part Time)</b> <i>DataAnnotation</i>	Feb. 2026–Present <i>Remote</i>
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- Reviewed and graded the quality of AI responses (text output from LLMs). Created custom, realistic system and user prompts and evaluated model responses.

<b>Postdoctoral Researcher (Physics)</b> <i>The University of Kansas</i>	Jan. 2021–Jan. 2026 <i>Lawrence, KS</i>
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- Analyzed CMS data and Monte Carlo simulation (billions of events) using over 2,000 independent search regions in a data-driven fit to search for supersymmetric particles. Used ML algorithms (DNNs) to identify bottom quarks.
- Developed an automated electrical testing framework (Python) to test high-speed (1.28 Gbps) electrical cables (e-links). Reduced testing time by a factor of 10. Framework used to test over 1,000 e-links for the CMS pixel tracker upgrade.
- Created a visualization of e-link production for each stage over time (Python, Pandas, NumPy, Matplotlib). Demonstrated that e-link production was projected to finish 1.5 years ahead of schedule.

<b>Research Assistant (Physics)</b> <i>Baylor University</i>	May 2016–Dec. 2020 <i>Fermilab (Batavia, IL) and CERN (Meyrin, Switzerland)</i>
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- Analyzed CMS data and Monte Carlo simulation (billions of events) to search for supersymmetric particles. Used data-driven analysis to predict the Z to neutrinos background and associated uncertainties. Used ML algorithms (DNNs) to identify top/bottom quarks and W bosons.
- Created and maintained software with a team at Fermilab, including GUI, database, and website (Python, Tkinter, Django, Bash), to test over 700 electronic readout cards for the CMS hadron calorimeter upgrade.

<b>Teaching Assistant (Physics), Instructor of Record</b> <i>Baylor University</i>	Aug. 2014–May 2016 <i>Waco, TX</i>
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- Taught undergraduate lectures (Physics 2) and labs (Physics 1 and 2).

## Personal Projects

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<b>Chess program</b>	Interactive chess program for human and computer players built in Python using PyGame.
<b>Speedcubing app</b>	Rubik's Cube algorithm Android app built using Android Studio, Kotlin, and Jetpack Compose.

## Education

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<b>Baylor University</b> PhD in Physics Dissertation: <i>Search for supersymmetric top quarks in the CMS Run 2 data set</i>	Aug. 2014–Dec. 2020
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<b>Baylor University</b> MA in Physics	Aug. 2014–May 2018
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<b>Taylor University</b> BS in Physics, Minor in Mathematics	Aug. 2011–May 2014
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