

Spectral Database for New Lighting Applications

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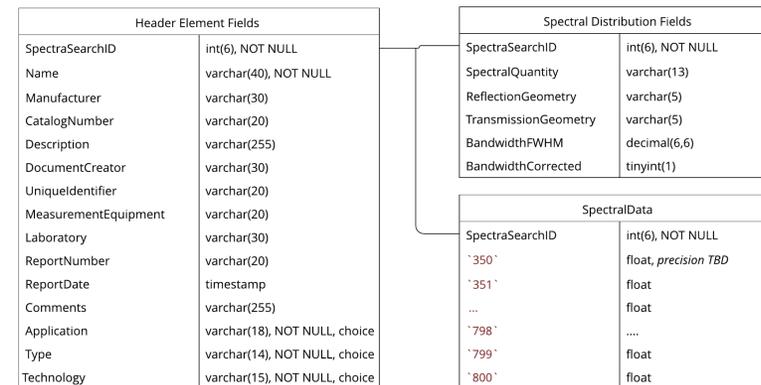
SpectraSearch is a **full-stack web application** that seeks to develop a **database of spectral data and a searchable interface for spectral data** to help lighting professionals evaluate lighting products against current and future requirements. The interface will primarily allow users to search for lighting instruments by name or by spectral data; have access to **spectral power distribution graphs**, calculated values of **metrics of interest** such as CIE chromacity coordinates, CCT (correlated color temperature), response spectra convolution, and CRI (Color Rendering Index) General/Extended; and general information such as **application, type, and manufacturer**. The interface will also allow users to upload spectral and corresponding data to be approved by an administrator before being uploaded into the database; this feature includes a log-in function and admin page.

The open-source project was created by a small team of Software Engineering students at American University in Washington, DC, working with scientists at the Department of Energy's Lighting R&D Program as primary stakeholders. The proof-of-concept software was debuted in a presentation to DOE stakeholders for AU's Software Engineering final and includes a working front-end, with primary requirements such as search and scroll, connected to a SQL database; two color math backend functions (CCT and CRI); and Spectral Power Distribution graph display. The software primarily uses NodeJS, react.JS, D3.js, and SQL.

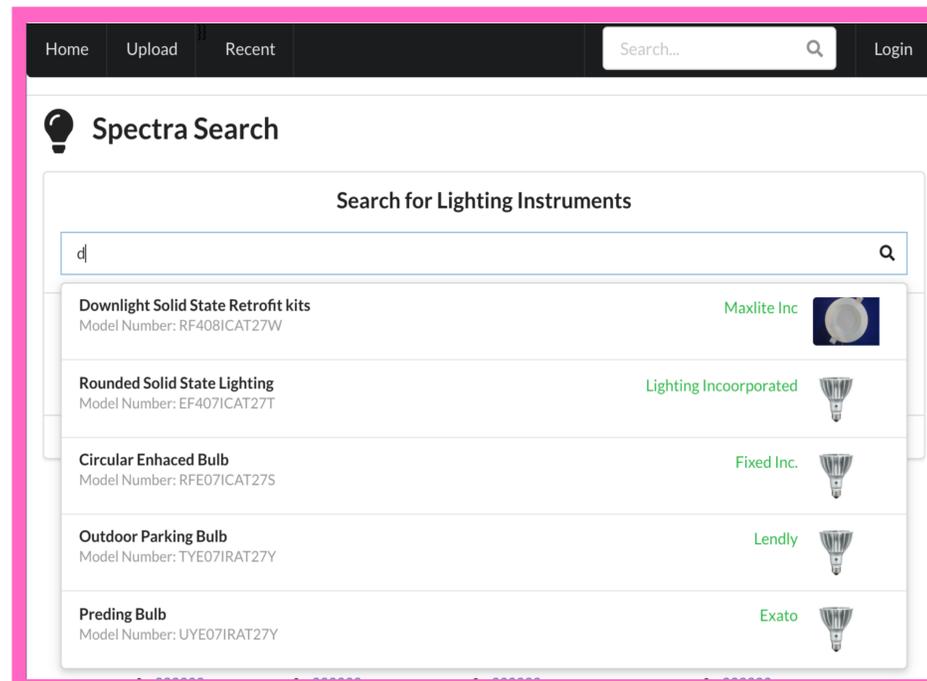
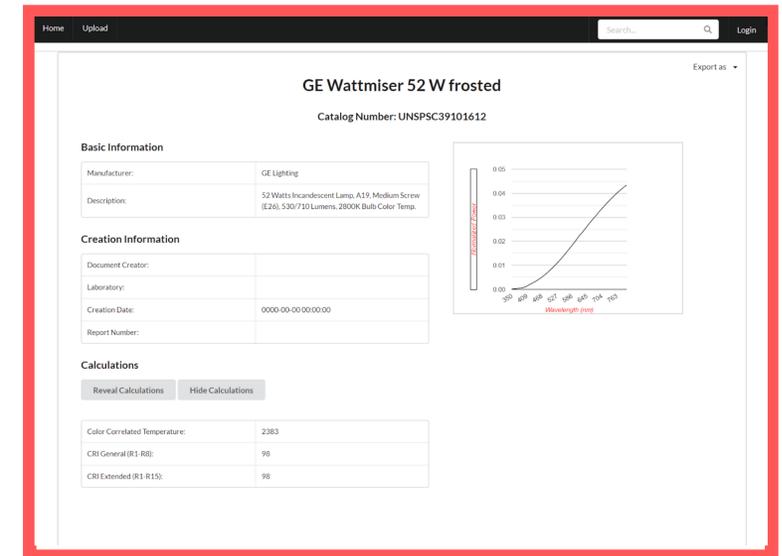
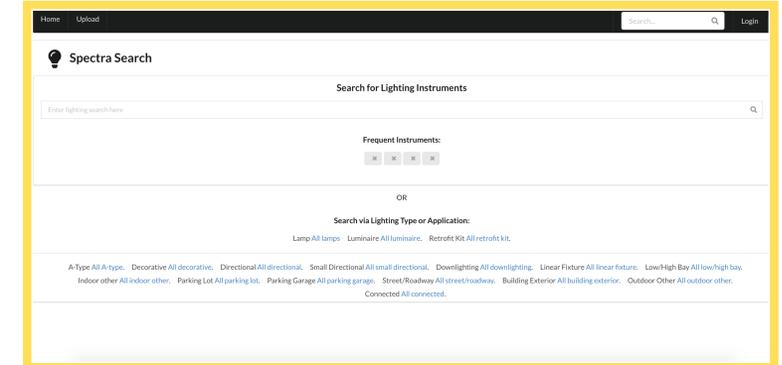
During the Spring 2020 semester, the current team members will continue to work with DOE stakeholders to put the proof-of-concept software into production as part of their Computer Science Senior Capstone course at American University. Plans for production include: populating the database, adding more color math functions, adding upload and download functions in a variety of file formats, and a general production quality cleanup.

Are you interested in becoming a stakeholder in this open-source project or in giving us feedback on your professional needs related to a spectral database/interface? Email LilyKDonaldson@gmail.com for more information.

SpectraSearch Database ER Diagram



The columns of SpectralData are 350 to 800 nanometers integer-inclusive. We do not support spectral distribution values in decimal format (i.e. 350.5 nm, 700.6 nm) or values below 350 nm or above 800 nm.



Current Team Members
Lily Donaldson | Client Liaison, Database/Backend Engineer, Scrum Master
Elisabetta Gabriele | Front-end Software Engineer
Rebecca Sakaguchi | UI/UX Engineer
Matthew Fields | Software Engineer (floating)

Faculty Advisor
Alex Godwin, Ph. D. | Software Engineering professor, Capstone Faculty Advisor

Stakeholders
U.S. Department of Energy Lighting R&D Program | Washington, DC
Arthur Shapiro, Ph. D. | American University Computer Science Professor, Vision Scientist

Former Team Members
Anthony Baron, Chuyan Cheng, Yuhao Li, Zhiqi Lu