



- [Close Window](#)
- [Print This Page](#)
- [Expand All](#) | [Collapse All](#)

## Hu\_COMP523

---

### Application Processing

Stage	Invite to Pitch
Program applying to	UNC Dept of Computer Science
Account Name	Kitware, Inc.
Founder's survey Prefill link	<a href="http://www.tfaforms.com/4600347?account=0011M00002GwpWQ&amp;campaign=&amp;opp=0061M00001BbWJn">www.tfaforms.com/4600347?account=0011M00002GwpWQ&amp;campaign=&amp;opp=0061M00001BbWJn</a>

### Opportunity

Opportunity Name	Hu_COMP523	Opportunity Owner	COMP523 ProgramMgr
------------------	------------	-------------------	--------------------

### Primary Contact

First name	Brian
Last name	Hu
Email	brian.hu@kitware.com
Professional Title	Senior R&D Engineer

### Project Idea

**Reason for application** Deep learning has undergone a recent revolution, enabling predictive models that are learned directly from data and can perform well on downstream tasks. Unfortunately, these models are also "black boxes" ([https://en.wikipedia.org/wiki/Black\\_box](https://en.wikipedia.org/wiki/Black_box)), and in mission-critical situations, their lack of interpretability presents a serious barrier to use. We aim to support the field of explainable artificial intelligence (XAI) by developing tools and resources for explaining and interpreting deep learning models.

To address this, we are developing an open-source toolkit `xaitk-saliency` (<https://github.com/XAITK/xaitk-saliency>). The toolkit is designed to help explain complex, black-box machine learning algorithms in various domains, including image classification, similarity, and detection. In the future, we also plan to support autonomy-related applications such as reinforcement learning. The toolkit currently provides interface classes and implementations to compute "visual saliency maps" from black-box models, which help to reveal what a model pays attention to when it makes its prediction.

In this toolkit, we have so far developed an API in terms of Python classes and functions. In addition to this, we want to have a web API to expose algorithm configuration and operation for over-the-web scenarios like cloud computing. We envision this web service being containerized to standardize the application environment as well as to be compatible with various cloud frameworks. An additional service that provides a web UI for interacting with this "backend" service, provided as a separate server and container, would also be of use as a demonstration example of both algorithm functionality as well as integrating with the backend service.

**CS - Current Solution** We have not addressed web service containerization of this toolkit yet, so the slate is fairly open and clean. The toolkit's interfaces utilize functionality from `SMQTK-Core` (<https://github.com/Kitware/SMQTK-Core>), which does provide dynamic discovery of interface implementations, and a mechanism for factory generation and configuration of concrete implementations.

**CS - Who are users?** Users of the software might be software developers or researchers working in the explainable artificial intelligence space. Additionally, we are working closely with government partners to help transition the software to other use cases, e.g. in the testing and validation of real-world machine learning models in evaluation or deployed scenarios.

<b>CS - Software Access Point</b>	Web browser (desktop); Desktop app for Linux; Other
<b>Other Access Point</b>	Software package which users can install themselves
<b>CS - Additional Constraints</b>	<p>The xaitk-saliency package is currently composed of pure python. For the proposed project, we are interested in building a web service, which we expect would use an established python web framework like Flask or FastAPI. Additionally, we tend to use containerization tools such as Docker or Podman.</p> <p>More specifically, these are some software/system requirements:</p> <ul style="list-style-type: none"> <li>- Services should be housed in a separate repository from xaitk-saliency, employing modularity between the base library and the "application" that is the web service(s).</li> <li>- Use of established, mature dependencies for major components, like Flask or FastAPI for the server component.</li> <li>- Use of Docker or Podman for the containerization of the environment and application.</li> </ul>
<b>CS - Concerns with student ownership?</b>	Yes, I have concerns.
<b>CS - Describe Concerns</b>	<p>Could we get clarification on what is meant by this? Is this just referring to the students to be able to put copyright on the work, or as in they get to choose their own license? (e.g. we want to steer away from GPL)</p> <p>The toolkit is currently being developed as free, open-source software and we would like to keep it that way. The current software has a permissive BSD-3 license.</p>
<b>CS - Protected health information?</b>	No, we do not anticipate the need to access or use PHI.
<b>Additional information</b>	<p>We have a public-facing website describing the overall XAI toolkit effort here: <a href="https://xaitk.github.io">xaitk.github.io</a></p> <p>A short summary of the DARPA XAI program on explainable AI can be found here: <a href="https://www.darpa.mil/program/explainable-artificial-intelligence">https://www.darpa.mil/program/explainable-artificial-intelligence</a></p>
<b>Comments</b>	

---

## Client Expectations

<b>CS - How critical is software?</b>	We designed the project with the understanding that a group of undergraduates would work on it. As a result, the software is not mission-critical, although we do believe that it offers many learning opportunities and has the potential to be impactful in demoing the larger xaitk-saliency package.
<b>CS - Available to pitch?</b>	Yes
<b>CS - Available to convey requirements?</b>	Yes
<b>CS - Available to answer questions?</b>	Yes
<b>CS - Reasonable expectations?</b>	Yes
<b>Consulting - Attend team meetings?</b>	Yes
<b>CS - Able to pay for infrastructure?</b>	Yes

---

## Client Group

<b>Founder 2</b>	Paul Tunison
<b>Founder2 First name</b>	Paul

Founder2 last name Tunison  
Founder2 email paul.tunison@kitware.com

**Founder 3**

Founder3 first name

Founder3 last name

Founder3 email

**Founder 4**

Founder4 first name

Founder4 last name

Founder4 email

---

**Pitch Survey Information**

CS - Pitch Availability

Other Availability

CS - Recording of presentation

Project Name

Description

---

**Application Details**

Close Date 7/28/2021

**Account Information**

---

**Business Organization Account**

Account Name	Kitware, Inc.	Phone	
Parent Account		Website	
Account Active Status		Email	
Type of Business Organization		Fax	
Other Business Org Type		UNC DAVIE ID	
CRVF Investment		Account Owner	CSAlumni ProgramMgr
CAN investment			
Contact			

---

**Address**

Billing Address	United States	Shipping Address	United States
-----------------	---------------	------------------	---------------

---

**Additional Information**

Description

Industry

Comments

---

**System Information**

Created By Suchi Parekh, 6/27/2019 9:09 AM

Last Modified By Forms User API, 7/28/2021 9:26 PM

---

**Custom Links**

[Google Search](#)

[Google Maps](#)

[Google News](#)

---

Copyright © 2000-2021 salesforce.com, inc. All rights reserved.

normal