
Differentiable Simulation

- Please don't delete things that other people add
- Please make sure your name is next to the question, like this [Graeme]

Introduction

- Example question [Ben]

Overview of MODE (Pietro Vischia)

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TomOpt (Giles Strong)

- [Liz]: HSF had licensing working group, info provided a few years ago, not much has changed since then. Mostly recommended if you want wide contributions, including industry, best would be to go for non-viral license. Also one that's been tested in court: Apache 2. A lot of companies work w/ OpenLab at CERN, and they prefer this. Same story for CMSSW. ATLAS also uses Apache 2. LGPL can work if developers will only contribute specific libraries. Overall, HSF recommends going with most open license that developers will tolerate.
- [Graeme]: AGPL is even stricter, covers e.g. remote use of code, can be problematic for industry collaborations, recommend against it. Not so much of a difference w/ more liberal ones, even MIT. Also make sure to establish who has copyright on code, even before licensing.
- [Liz]: At citation workshop last week, learned that you can put a CITATION.cff file along with LICENSE file in GitHub repo.
- [Giles]: Was at workshop! Thinking that Apache 2 is easiest, but concern that there is heavy industry involvement. Want to avoid industry taking free research code and making a lot of money off of it.
- [Liz]: pros and cons of value of product & sustainability, i.e. want as many people contributing as possible, vs. people taking and not giving back. GNU software foundation thinks that people won't give anything back w/o incentive to do that, but sustainability can be an incentive all by itself. Apache server itself is licensed under Apache 2, so the model can work in industry.

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- [Kevin]: Charging for support for open-source software can be a good model, since industry companies tend to expect and budget for this.
 - [Kevin]: Open code is always better to attract developers. Not sure if releasing before publication has an impact. Wouldn't be worried about getting scooped in this case.
 - [Liz]: With Pythia, authors desperately wanted to produce citable paper before releasing software, so because of long journal review process, software release was delayed by ~half year or more. This just caused trouble for CMS because it wasn't ready for start of Run 2. Therefore, kind of against waiting for a publication to release software. Not a strong correlation between release of code and scientific paper. CITATION.cff covers this, and can put preprint on arxiv at any point. Can change citation to journal article when it is published. CITATION.cff is a living document, don't need to worry about timing as much.
 - [Kevin]: INSPIRE can combine/update citations if needed as things evolve.

Differentiable simulation for MAGIS (Michael Kagan)

- [Liz]: Showed going from 2D to 3D model for benchtop system. Would this scale to 100m, 1km scale for same sort of experiment?
- [Michael]: Building it hoping to put it right in. Experiment is large, but atoms are only imaged in a few places: where launched from. Would need to put 3D system at each imaging point. Hopefully can be ready in coming months.
- [Kevin]: is there a frequency limitation because of rate of releasing clouds?
- [Michael]: we image differences between clouds. 1 Hz rate, maybe up to few Hz. This w/ time series analysis sets lower bound on what can be measured. Upper bound based on launching and manipulating clouds in superpositions.