

rOpenSci Community Call v17

Working with images in R, with Jeroen Ooms, rOpenSci postdoc and software engineer

This doc is a place for collaborative note taking and adding questions during the call.

Details on joining the call, timezones, speaker bios etc:

<https://ropensci.org/blog/2018/10/24/commcall-nov2018/>

This call will be recorded and posted at <https://vimeo.com/ropensci>

Agenda

1. Welcome (5 min, Stefanie Butland, rOpenSci Community Manager)
2. Working with Images in R presentation and demo (Jeroen Ooms, 35 min)
3. Q & A (20 min)

In attendance (add yourself here):

- Name, Affiliation
- Stefanie Butland, rOpenSci
- Jeroen Ooms, rOpenSci
- Hugo Gruson, Université de Montpellier
- Karthik Ram, rOpenSci
- Maëlle Salmon, rOpenSci
- Dmytro Perepolkin, UiO/Equinor
- Piotr Goral, Accenture Research
- Laurens Geffert, no affiliation
- Roel Hogervorst, no affiliation
- Alyssa Columbus, Pacific Life
- Susan Vanderplas, Iowa State University
- John Smith, Shambhala
- John Blischak, University of Chicago
- Scott Chamberlain, ropensci
- Brandon Hurr, Syngenta Vegetables
- Mike O'Brien, University of Maryland

- Aimee Hoover, University of Maryland
- Roy Mendelssohn, NMFS/SWFSC
- Rosealea Bond, NMFS/SWFSC
- Flora Cordoleani, NMFS/SWFSC
- Ann-Marie Osterback, NMFS/SWFSC
- Alyssa Fitzgerald, NMFS/SWFSC
- Eric Milgram, MZAnalytics
- Arun Talegaonkar, GE Appliances, USA
- Wenzheng He
- Travis Hinkelman, Cramer Fish Sciences
- Caitie Kuempel, NCEAS UC Santa Barbara
- Robyn Thiessen-Bock, NCEAS UC Santa Barbara
- Jeanette Clark, NCEAS UC Santa Barbara
- Marie C Bonin, Mentor G
- Marion Louveaux, Univ. Heidelberg
- Anonymous, curso-r
- Anonymous x 14

Total attendees: 46. Total minus rOpenSci: 41

Questions for Jeroen (add yours here as you think of them):

- ☒ What resources would you recommend for wrapping c/ c++ packages? (how do you do it?)
 - Copy what other packages do, there are many good examples. Have a look at their configure and Makevars script, and adapt them to your need. Some simple C wrappers that I wrote include curl, openssl and simple C++ wrappers for are pdftools, tesseract, magick.
- ☒ With recent tools such as reticulate, which benefit do you see to use packages such as opencv, or tesseract, in R instead of python directly? I mean, from an end user point of view, you could use both python and R in a Rmd document
 - Tesseract and OpenCV are actually C++ libraries, not python modules. The R packages do not go through python if this is what you mean. If you do things in python and that works for you, that's fine. But if you want to use these libraries in conjunction with other R tools, you will probably need the R package.
- ☒ Can you talk a little bit about your experiments with Rust? Do you believe R could adopt infrastructure for embedding Rust crates into R packages? What would it take (CRAN)?

- The CRAN package `gifs` already embeds a rust crate. It works great, I expect other packages to follow. More examples: <https://github.com/r-rust/hellorust>
- ☒ General question: you're presenting pretty cool examples of picture analysis. I know that `ropenci` keeps track of their package citations (twitter bot tweeting new citations <https://twitter.com/rocitations>), do you have a place that lists all articles related to a package in one place?
 - Stef: We have <https://github.com/ropensci/roapi/blob/master/data/citations.csv> from Scott Chamberlain and we plan to make these available on our website at some point
- ☒ Data types in `magick` package: most functions take and output images (`magick` image class). Recently you started adding functions that output other types (text for hough lines). What is your view on extending the set of data types available in package (you showed some histograms today)? Could you imagine expanding the set of functions that **output** `matrices/tibbles/tbl_cubes`? How about vector data (SVG, sf)? Is it as mere wrapper of ImageMagick?
 - Indeed most functions in `magick` transform images but there are also many functions that operate with other data types as input (e.g. `annotate`, `draw`) or output (`ocr`, `compare-dist`). We can include all functionality that makes sense, though really high-level or domain-specific tools that do not need to interface the C++ API directly can better go into a separate package.
- ☒ From what I understand, pretty much everything that `magick`/`imagemagick` does can be done with `opencv`. `OpenCV` also has some features that are not available or that would be difficult to mimic with `magick`. In which cases is `magick` better suited than `opencv` in your opinion?
 - I think they are pretty different. There is a bit of overlap between `ImageMagick` and `OpenCV` but they have different scope. `ImageMagick` is a comprehensive image processing toolkit with lots of tools for editing, converting, analysis, etc. `OpenCV` is really focused on vision, i.e. training and scoring recognition models.
- ☒ Stef: Jeroen will we be able to link to your slides from the community call resources? E.g. as done here: <http://communitycalls.ropensci.org/#2018-10-16>
 - <https://jeroen.github.io/munster2018/>
- ☒ Can you recommend a good approach to allow interaction with images through Shiny to enable a user to specify a region of interest on top of an image?
 - found this reference: https://jfkf.github.io/2017-02-26-cropping_images_with_a_shiny_app/

- I tried this but never got it to work well enough:
<https://github.com/jeroen/imwidgets>

What would you like to hear about / learn on a future rOpenSci Community Call?

Next call:

Dec 18, Dan Sholler, rOpenSci postdoc on Governance strategies for open source research software projects

Details: <http://communitycalls.ropensci.org/#next-call>

Here are some we're thinking about:

- rOpenSci Taxonomy suite of tools
 - <https://ropensci.org/blog/2017/07/27/taxonomy-suite/>
 - Looking for people to share use cases
- Maintaining R packages (+onboarding?)
- Testing API packages: webmockr
- Geospatial analysis in R with Antarctic and Southern Ocean science as example