Multivariate rational approximation with applications

Research Data Summary

List and describe all datasets or research materials that you plan to generate/collect or reuse during your research project. For each dataset or data type (observational, experimental etc.), provide a short name & description (sufficient for yourself to know what data it is about), indicate whether the data are newly generated/collected or reused, digital or physical, also indicate the type of the data (the kind of content), its technical format (file extension), and an estimate of the upper limit of the volume of the data.

Dataset name / ID	Description	New or reuse	Digital or Physical data	Data Type	File format	Data volume	Physical volume
		*Indicate: **N**(ew data) or **E**(xisting data)*	Indicate: **D**(igital) or **P**(hysical)	Indicate: **A**udiovisual **I**mages **S**ound **N**umerical **T**extual **M**odel **SO**ftware Other (specify)		Indicate: <1GB <100GB <1TB <5TB >5TB NA	
Publications and presentation data	Publications, and presentation of data Publications generated using LaTeX, Microsoft Word, Powerpoint.	N	D	AIT	PDF (.pdf) LaTeX (.tex) Images (.jpeg)	<100GB	
Research software	Software (Matlab,Python, Julia,C++,Fortran)	N + E	D	SO	.m/.py/.jl/.cpp/.f/.txt/.dat/.html	<10GB	

If you reuse existing data, please specify the source, preferably by using a persistent identifier (e.g. DOI, Handle, URL etc.) per dataset or data type:

- Problem description and software published with journal articles (source: journal website/author's repositories).

Are there any ethical issues concerning the creation and/or use of the data (e.g. experiments on humans or animals, dual use)? If so, refer to specific datasets or data types when appropriate and provide the relevant ethical approval number.

- No

Will you process personal data? If so, please refer to specific datasets or data types when appropriate and provide the KU Leuven or UZ Leuven privacy register number (G or S number).

- No

Does your work have potential for commercial valorization (e.g. tech transfer, for example spin-offs, commercial exploitation, …)?

If so, please comment per dataset or data type where appropriate.

- Yes

Since the project has a fundamental nature, commercial valorization will not be immediate. However, it is a possibility in the application part of the project. Any software produced in the project will come with a license which allows later use in commercial valorization, such as the MIT Open Source license.

Do existing 3rd party agreements restrict exploitation or dissemination of the data you (re)use (e.g. Material or Data transfer agreements, Research collaboration agreements)? If so, please explain in the comment section to what data they relate and what restrictions are in place.

- No

Are there any other legal issues, such as intellectual property rights and ownership, to be managed related to the data you (re)use? If so, please explain in the comment section to what data they relate and which restrictions will be asserted.

- No

Documentation and Metadata

Clearly describe what approach will be followed to capture the accompanying information necessary to keep data understandable and usable, for yourself and others, now and in the future (e.g. in terms of documentation levels and types required, procedures used, Electronic Lab Notebooks, README.txt files, codebook.tsv etc. where this information is recorded).

1. Software is stored at gitlab.kuleuven.be and nextcloud.cs.kuleuven.be, using version control. README.txt files explain how to use the software and run the text cases.
1. For each paper, a description file including the exact command line is provided for reproducibility.

Will a metadata standard be used to make it easier to find and reuse the data?
If so, please specify which metadata standard will be used.

If not, please specify which metadata will be created to make the data easier to find and reuse.

- No

Data Storage & Back-up during the Research Project

Where will the data be stored?

- Sharepoint online
- Other (specify below)
- OneDrive (KU Leuven)

- gitlab.kuleuven.be
- Nextcloud.cs.kuleuven.be: File-sharing system for internal use in the department of computer science

How will the data be backed up?

- Other (specify below)
- Standard back-up provided by KU Leuven ICTS for my storage solution
- Data at KULeuven hosted services (gitlab, onedrive) is backed up using KULeuven ICTS.
- Data on laptops and desktops used for the project are backed up using the systematic backup procedures of the Department of Computer Science. The system is specified here: https://system.cs.kuleuven.be/cs/system/services/backup/backup.shtml

Is there currently sufficient storage & backup capacity during the project?

If no or insufficient storage or backup capacities are available, explain how this will be taken care of.

- Yes

The Dept CS NetApp datastorage will be used for local storage at the department.

How will you ensure that the data are securely stored and not accessed or modified by unauthorized persons?

Research data are stored and managed by the KU Leuven ICTS and the CS department and are accessible only by the researchers working on the project.

What are the expected costs for data storage and backup during the research project? How will these costs be covered?

The Gitlab repository server is offered by KU Leuven.
The Dept CS NetApp datastorage is covered by the budget of this project. After this project ends this cost is taken over by the research group(s)' reserves.

Data Preservation after the end of the Research Project

Which data will be retained for 10 years (or longer, in agreement with other retention policies that are applicable) after the end of the project?

In case some data cannot be preserved, clearly state the reasons for this (e.g. legal or contractual restrictions, storage/budget issues, institutional policies...).

- All data will be preserved for 10 years according to KU Leuven RDM policy

Where will these data be archived (stored and curated for the long-term)?

- Other (specify below)

The Dept CS NetApp storage solution (>10TB) will retain snapshots for every publication (source code, experiments, manuscript) for at least 10 years.

What are the expected costs for data preservation during the expected retention period? How will these costs be covered?

The Dept CS NetApp longterm storage is covered by the research group's reserves. For this project, this is expected to be <100 euros / year (this does not include costs for computation which is only relevant during the project).

Data Sharing and Reuse

Will the data (or part of the data) be made available for reuse after/during the project?
Please explain per dataset or data type which data will be made available.

- Yes, as open data
- Other (specify below)

Latex files stay private, the publications (pdf) are available through the journals websites (and available as open access following applicable regulations, via KU Leuven Lirias and via the repository website arxiv.org). Software and data to run the software are open, via gitlab.kuleuven.be.

If access is restricted, please specify who will be able to access the data and under what conditions.

The researchers of the project will be able to access the latex files.

Are there any factors that restrict or prevent the sharing of (some of) the data (e.g. as defined in an agreement with a 3rd party, legal restrictions)?

Please explain per dataset or data type where appropriate.

- No

Where will the data be made available?

If already known, please provide a repository per dataset or data type.

- Other data repository (specify below)
- Code (including simulation data for reproduction of experiments in papers) is made available via: gitlab.kuleuven.be
- Papers are made available via the journal's websites, KU Leuven Lirias and arxiv.org

When will the data be made available?

- Upon publication of research results

Which data usage licenses are you going to provide?

If none, please explain why.

- MIT licence (code)

Do you intend to add a persistent identifier (PID) to your dataset(s), e.g. a DOI or accession number? If already available, please provide it here.

- No

What are the expected costs for data sharing? How will these costs be covered?

We don't expect any costs regarding data sharing.

Responsibilities

Who will manage data documentation and metadata during the research project?

Professors Karl Meerbergen and Daan Huybrechs.

Who will manage data storage and backup during the research project?

ICTS (KU Leuven) and CS (KU Leuven)

Who will manage data preservation and sharing?

Karl Meerbergen and Daan Huybrechs

Who will update and implement this DMP?

Karl Meerbergen (PI) bears the end responsibility of updating & implementing this DMP.