



DATASTORES FOR ARGUMENTATION DATA

CMNA'20

VIRTUAL PERUGIA

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INTRODUCTION

OUTLINING THE ORGANIC DEVELOPMENT OF SOME ARGUMENTATION TOOLS...

A lot of argumentation research is founded upon data

In the philosophical community this can be single examples of interesting argumentative behaviour

In the computational community this is increasingly oriented towards argumentative data at scale:

Knowledge bases (e.g. for behaviour change apps/sites)

Datasets for training ML (e.g. for argument mining)

PROBLEM

THE COMPUTATIONAL ARGUMENT SOFTWARE ECO-SYSTEM

Very little software out there for building and sharing datasets

Can build it yourself or adopt an existing set of tools

Even if there are some existing tools there's always room for healthy competition

There are a lot of niches and a "one size fits all" approach sometimes doesn't

What if I want my data on my server?

What if I want to change the way the software works?

What if all my changes are more effort than just building something from scratch?

Mightn't we learn something along the way?

EARLIER PROBLEM

CORE DEVELOPMENT STARTED BEFORE I RECOGNISED THE PROBLEM

Returning to the dataset scale issue

Wanted a platform for working with large datasets of argument

Explore different approaches to visualising argumentation data at scale

Embedding visualisations into webpages

So I started building MonkeyPuzzle

Using tools that are of and for the Web (HTML, CSS, JS)

Started as a version of Araucaria online, morphed into a graph visualiser tool with additions to remove some limitations and became a pure Web argument analysis tool

MONKEYPUZZLE

ARGUMENT ANALYSIS ON THE WEB

Araucaria was a little long in the tooth. Rationale too expensive. ArgTech tools on other peoples machines.

Debuted at CMNA'17

Has gone through various incarnations

Now:

Pure Web

Visualisation is graph-based

Serverless design

Embeddable

Once you have a tool, what do you do with it?

SADFACE

THE SIMPLE ARGUMENT DESCRIPTION FORMAT

Not every use of argumentation technology requires the sophistication of AIF

Ultimate extensibility

Tooling can be complex

Not a “grab it & go” technology

Aimed to be straightforward for

e.g. the average web developer to incorporate aspects of argumentation into their sites.

Also for general inclusion of argumentation technology into wider software ecosystem

If you need more power or expressiveness (AIF is still there & both formats are generally compatible)

SADFACE TOOLING

FOR WORKING WITH THE SADFACE FORMAT...

Can't just say "here's a specification, have at it...", need to make it easier for people to adopt (and to use myself)

Software for working with SADFace documents (Python/JS in development)

Creating | Manipulating | Updating | Importing | Exporting

Library for incorporating into other software or scripting

CLI | GUI

SADFACE EXAMPLE

“WHAT DOES IT LOOK LIKE?”

4 essential sections:

[1] Metadata

[2] Nodes

[3] Edges

[4] Resources

```
{
  "edges": [
    {
      "id": "3df54ae1-fa41-4ac7-85d5-4badee39215b",
      "source_id": "70447169-9264-41dc-b8e9-50523f8368c1",
      "target_id": "ae3f0c7f-9f69-4cab-9db3-3b9c46f56e09"
    },
    ...
  ],
  "metadata": {
    "core": {
      "analyst_email": "siwells@gmail.com",
      "analyst_name": "Simon Wells",
      "created": "2019-04-22T23:52:30",
      "description": "An example SADFace document showing an argument analysis of the Hangback cycle safety campaign from the STCD corpora.",
      "edited": "2019-04-22T23:52:30",
      "id": "42e56df7-4074-40d8-8ea1-4fca5321dd31",
      "notes": "This is incomplete because the analysis in Pangbourne & Wells (2018) has much more argumenative content.",
      "title": "Hangback Example",
      "version": "0.2"
    }
  },
  "nodes": [
    {
      "id": "ae3f0c7f-9f69-4cab-9db3-3b9c46f56e09",
      "metadata": {},
      "sources": [],
      "text": "The 'Hang Back' campaign video should not have been published, and should be withdrawn.",
      "type": "atom"
    },
    ...
  ],
  "resources": []
}
```


ARGDB

“WHAT DO I DO WITH ALL OF THESE SADFACE DOCUMENTS”

Put them in a database to make it easier to do wonderful things with them

JSON documents can go into JSON document stores (CouchDB is a good choice)

CouchDB UI is very generic

To keep with my earlier preoccupation with simple, extensible tools

Argument oriented datastore - The ArgDB

Build Interfaces for managing & exploring collections of SADFace documents

GUI (Web) | Library | CLI

ARGDB

A (WEB) UI FOR ARGUMENTATION DATASETS

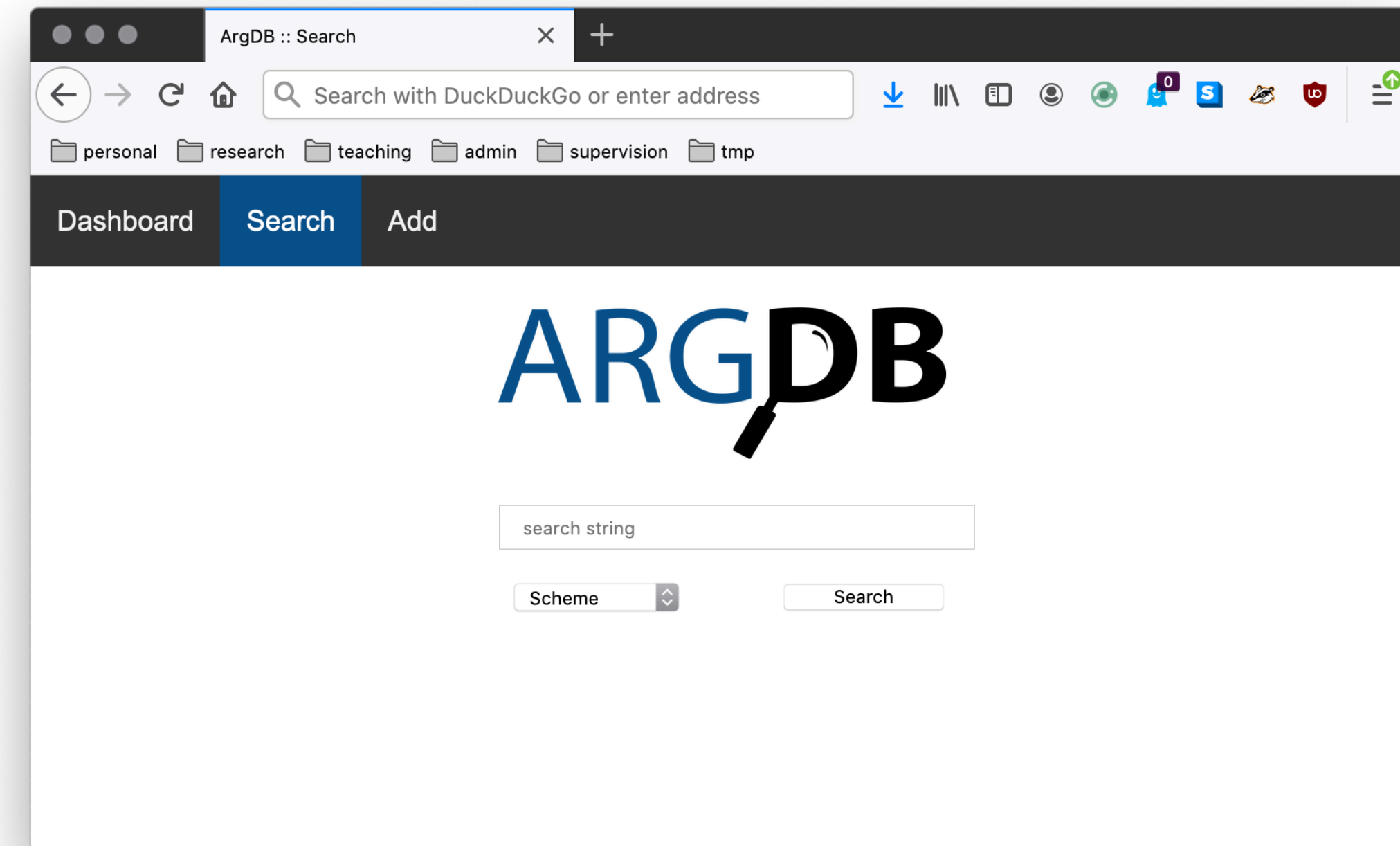
Inspired by simplicity of old school Google

Meant to support a “personal research Database”

Roadmap:

[1] Public Deployment Layer in development to support Deployment of ARgDB to the Web

[2] Federation layer in development to enable easy sharing of datasets



CASE STUDY

BUILDING A MANUAL ARGUMENT ANALYSIS WORKFLOW FROM OPEN SOURCE COMPONENTS

A description format & storage mechanism isn't the whole story - a way to generate documents in the description format ready for storing is required...

Use MonkeyPuzzle as an analysis tool

MonkeyPuzzle exports SADFace

SADFace imported to ArgDB

ArgDB UI used to retrieve SADFace documents

The screenshot shows a web browser window with the following elements:

- Browser Tab:** "Monkeypuzzle"
- Address Bar:** `arg.napier.ac.uk/monkeypuzzle/#`
- Navigation:** Back, Forward, Refresh, Home, and search icons.
- File Manager:** personal, research, teaching, admin, supervision, tmp
- Sidebar (Left):**
 - Tab: 1
 - Actions: Delete, Upload, Download, Lock, Share
 - Title:
 - Content:
- Main Content Area:** A logical diagram with nodes and arrows.
 - Top node: **If you are going to die then you should treasure every moment** (square)
 - Arrow labeled **Support** points to a green diamond node.
 - Left node: **You should treasure every moment** (square)
 - Right node: **You are going to die** (square)
 - Arrow labeled **Support** points from the right node to the green diamond node.
 - Bottom-right node: **Every person is going to die** (square)
 - Arrow labeled **Support** points from the bottom-right node to the green diamond node.
 - Far right node: **You are a person** (square)
 - Arrow labeled **Support** points from the far right node to the green diamond node.

CASE STUDY

WHAT DID I LEARN?

Search is difficult to get right. Search interfaces are just as difficult.

(at least if you care about efficient & pleasant user experiences)

Full text search would be nice (& probably very useful)

Getting the right level of integration is tricky

Too much and it is difficult to swap out one tool for another (undermines the wider open argumentation platform ideal)

Tool little and some steps that could be automated are manual (e.g. adding analysis to the datastore)

The more flexibility you add, the more balls you have to juggle

CONCLUDING REMARKS

IN SUMMARY....

Two technologies (SADFace & ArgDB) that work together

Form the core of a broader set of nascent argumentation software

The Open Argumentation platform (OAPL):

Representation & Description (SADFace)

Storage (ArgDB)

(Manual) Analysis (MonkeyPuzzle)

With the following in early/mid stages of development:

Manipulation - ALIAS

(Automated) Analysis - Canary

Dialogue Description & Management - DGDL & ADAMANT

FUTURE WORK

THE WORK IS NEVER FINISHED

Import existing datasets into ArgDB as exemplars and make available for download/sharing.

Public Deployments

Federation

Dialogue extension

Better integration with the other tools in OAPL

REFERENCES

TO UNDERPINNING WORK

S. Wells & J. Douglas (2017) "Monkeypuzzle: Towards Next Generation, Free & Open-Source, Argument Analysis Tools", Proceedings of the 17th International Workshop on Computational Models of Natural Argument(CMNA17), pp. 50-53, London, U.K.

D. Khartabil & S. Wells (2017) "Mapping Increasingly Large Networks of Argumentative Inferences", Poster abstract presented at the 2nd European Conference on Argumentation: Argumentation and Inference (ECA17), Fribourg, Switzerland

D. Khartabil, S. Wells, & J. Kennedy (2016) "Large-scale Argument Visualization (LSAV)", 18th EG/VGTC Conference on Visualization (EuroVis16), Groningen, Netherlands

S. Wells & R. La Greca (2015) "Introducing ALIAS", Proceedings of the 15th International Workshop on Computational Models of Natural Argument(CMNA15), Bertinoro, Italy.

S. Wells (2020) "The Open Argumentation Platform (OAPL) ", Proceedings of the 8th International Conference on Computational Models of Argument (COMMA 2020), Perugia, Italy.

LINKS

TO THE THINGS I'VE MENTIONED:

<http://www.openargumentation.org>

<https://github.com/Open-Argumentation/SADFace>

<https://github.com/Open-Argumentation/ArgDB>

<https://github.com/Open-Argumentation/MonkeyPuzzle>