TULAP

An Accessible and Sustainable Platform for Turkish NLP Resources

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Objectives

- To develop an online research output platform (ROP) to archive, demonstrate, and provide usable NLP resources created by a research group (deployed for TABILab)
- Offer the platform itself as an open-source resource

Motivation

- Keeping track of research outputs created by groups is challenging due to:
  - Lack of conventions and documentation
  - Potentially multiple versions
- Well-documented best versions of resources are essential for:
  - transfer of knowledge (within a lab as well as the scientific community)
  - continuity of research
- True accessibility of research outcomes calls for demonstrations as well as usability

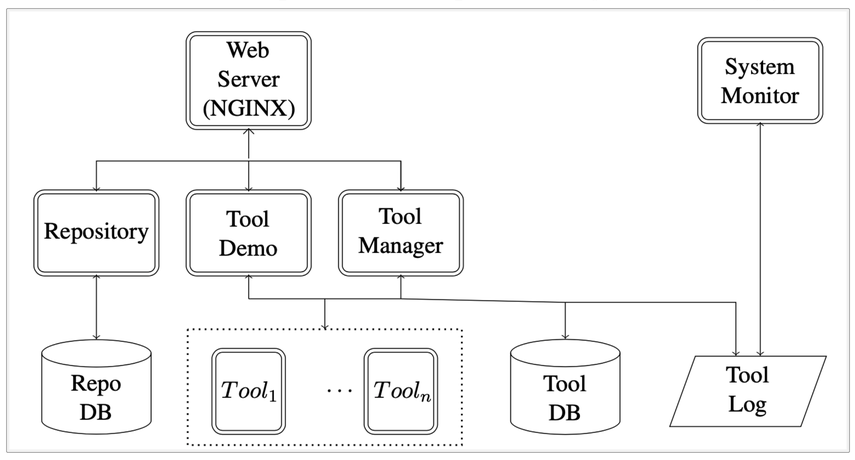
Main Contributions

- **R**esearch **O**utput **P**latform
  - Archival process to support continuous contributions
  - Systematic documentation of resources (datasets and tools)
  - APIs and containerized tool versions for accessibility
  - Monitoring system to identify problems and track resource usage
- NLP deployment (TULAP) [a]
  - Provides Turkish NLP resources developed at Boğaziçi University[b] including **13 datasets** and **17 tools** (April 2023)
  - Actively being used by our research group as a reference as well as for the addition of new datasets, tools and demos

[a] Turkish Language Processing Platform
[b] https://tulap.cmpe.boun.edu.tr/

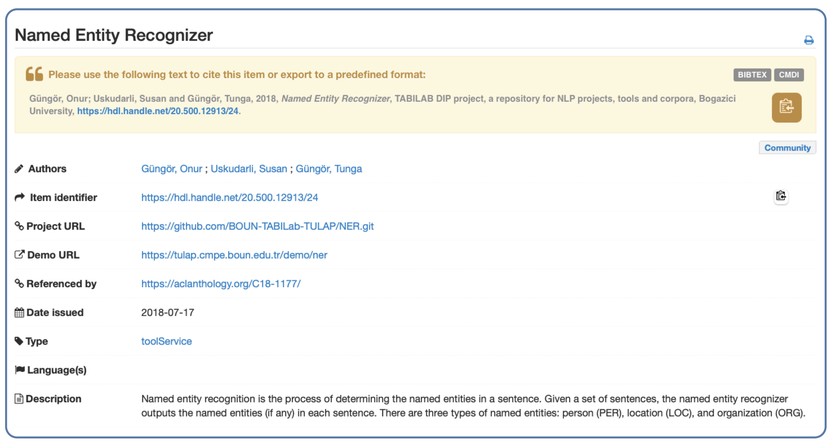
Design

Designed as containerized components for portability, scalability, and usability.

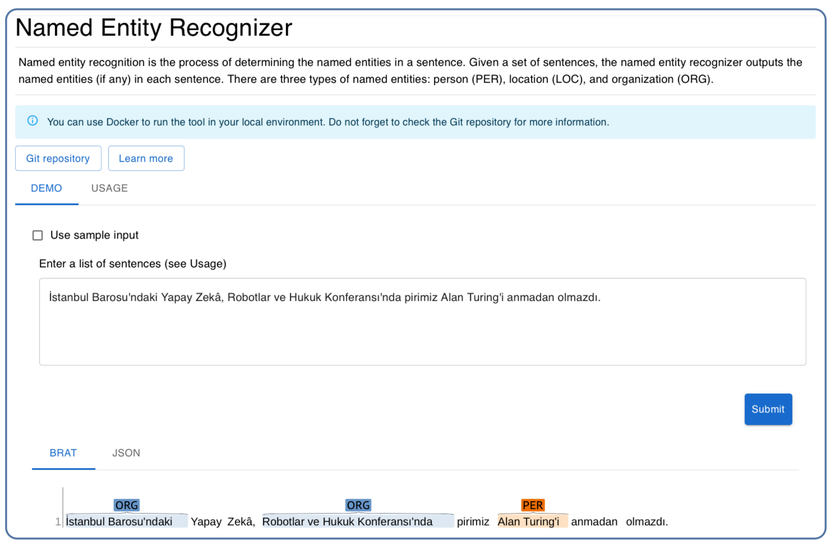


Use Case for Named Entity Recognizer (NER)

1. Discovery – Find and view info about some NER research



2. Demo – NER tool (seen above)



3. Executing tool – local deployment and API call (same as above)

```shell
$ git clone https://github.com/BOUN-TABILab-TULAP/NER.git
$ docker build -t ner .
$ docker run -d -p 8080:8080 ner
$ curl -X POST http://localhost:8080/ner/predict/ -H 'Content-Type:
application/json' -d '{"text":"İstanbul Barosu\'ndaki Yapay Zekâ,
Robotlar ve Hukuk Konferansı\'nda pirimiz Alan Turing\'i anmadan
olmazdı."}'

{'tagger_output': {'0': ['İstanbul', 'B-ORG'], '1': ["Barosu'ndaki",
'I-ORG'], '2': ['Yapay', 'O'], '3': ['Zekâ', 'O'], ...}
```

4. New tool demos can be added by specifying general information, demo input-output specifications, and a user guide.
5. Monitoring demos: *System Monitor* to analyze usage metrics

Requirements of platform

- Resources can easily be added
- Resources can be searched, browsed, and utilized
- An interactive demo to showcase tool functionality
- Open-source tools are easily deployable to support accessibility
- Robust building, monitoring, and restarting of platform via container-based architecture
- Seamless addition of new tools due to containers and systematic access via APIs
- A monitoring tool to track the state and use of the system

Implementation

- All tools provide an API
- All tools and system components are containerized using Docker
- DSpace for systematic and standardized documentation of resources

Future Work

- Improving present tools
- Addition of new tools
- Improved user and tool interaction

Acknowledgements

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Resources

[1] github.com/ufal/clarin-dspace
[2] wiki.lyrasis.org/display/DSPACE
[3] https://github.com/BOUN-TABILab-TULAP/tabi-rop
[4] tabilab.cmpe.boun.edu.tr
[5] github.com/BOUN-TABILab-TULAP