

EMERSE Community Meeting

em^{ER}rse

2023-Oct-10

<https://project-emerse.org>

Plan for today

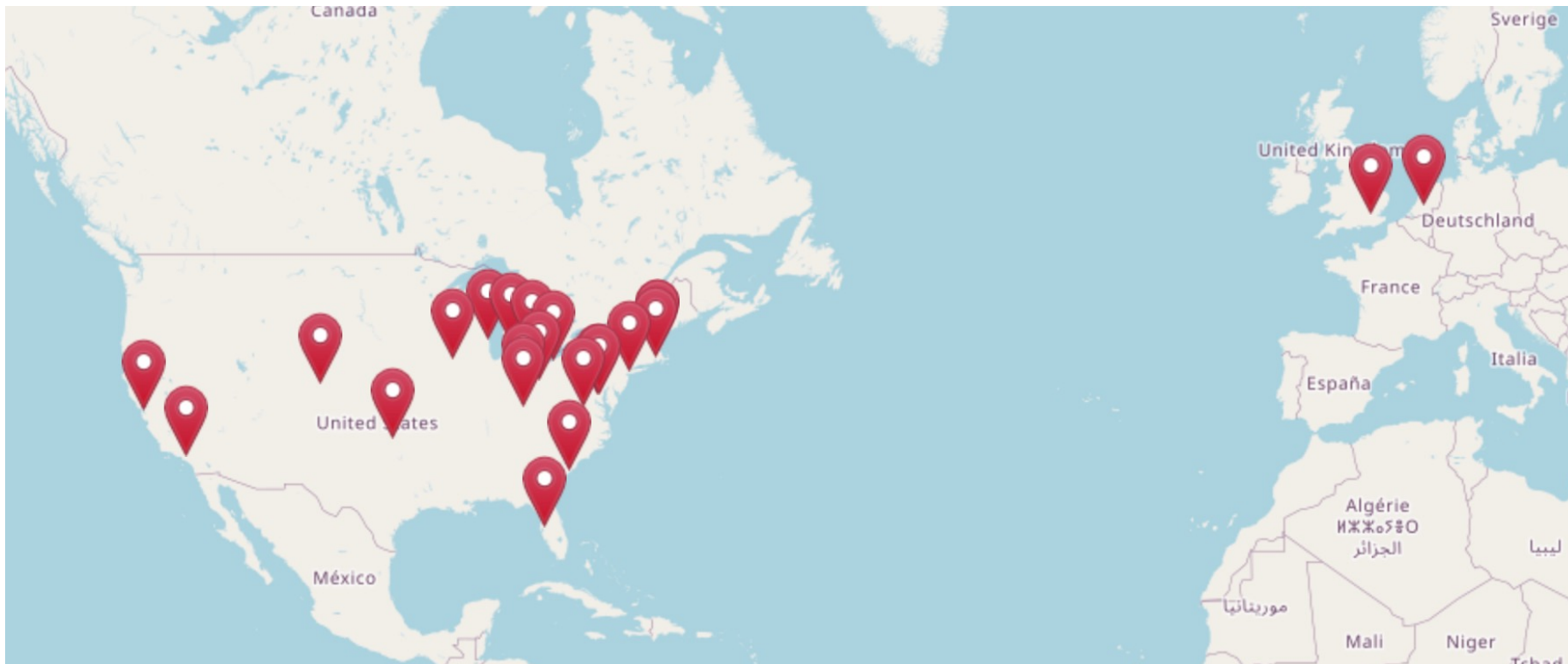
- Welcome and Housekeeping
- Announcements and Updates
- Publication updates
- EMERSE and NLP: David Hanauer
- Discussion: Administration, Architecture and Technology
- Open Forum
- Adjourn

Housekeeping

- *Zoom Meeting*
 - More opportunities for interaction
- Please stay muted, unless you would like to ask a question or make a comment
- Feel free to use the chat function to type questions or provide comments
- We will answer questions throughout
- We will record this meeting, available where prior recordings are located: <https://project-emerse.org/presentations.html>

Our Community

- Location of registrants for today's meeting
 - <https://project-emerse.org/community.html>



Acknowledgements

- EMERSE has been supported by:
 - NCI ITCR program
 - NCATS via MICHR CTSA
 - Michigan Medicine
 - Department of Learning Health Sciences
 - Office of Research
 - Health Information Technology & Services

Updates and Announcements

- New NCI ITCR U24 Grant Awarded!
 - 5 years (October 2023 – September 2028)
 - Overview of Aims at next Community Meeting (TBD ~Jan/Feb 2024)
- EMERSE Research Collaborative
 - Kick-off – May 23, 2023
 - Next meeting: Oct 26, 2023

Publications

536

Papers

91

Abstracts

18

Other

Publications

- **University of Michigan**

- Impact of Metagenomic Next-Generation Sequencing of Plasma Cell-free DNA Testing in the Management of Patients With Suspected Infectious Diseases
- Low-parameter supervised learning models can discriminate pseudoprogression and true progression in non-perfusion-based MRI
- Margin status in vulvovaginal melanoma: Management and oncologic outcomes of 50 cases
- Presenting Symptoms and Imaging Features of Posterior Cerebral Artery Stroke Causing Homonymous Hemianopia
- Subcutaneous Leiomyosarcoma: An Aggressive Malignancy Portending a Significant Risk of Metastasis and Death

Publications

- **University of California – San Francisco**
 - Demographic and clinical characteristics of patients with metastatic breast cancer and leptomeningeal disease: A single center retrospective cohort study
 - Social Determinants of Health Documentation in Structured and Unstructured Clinical Data of Patients With Diabetes: Comparative Analysis
- **University of North Carolina – Chapel Hill**
 - Transition of care from the emergency department to skilled nursing facility: Retrospective case-control study

Publications

- **Case Western Reserve University**
 - Social Determinants of Health and Racial Disparities in Cardiac Events in Breast Cancer
 - Social Determinants of Health Data Improve the Prediction of Cardiac Outcomes in Females with Breast Cancer
 - Thirty-Day Unplanned Hospital Readmissions in Patients With Cancer and the Impact of Social Determinants of Health: A Machine Learning Approach
 - The Development of Head and Neck Cancer in Patients with the Isolated Complaint of Globus Pharyngeus

Publications – “The largest”

- “...this is the **largest series to date** that examines the importance of preinvasive disease [of vulvovaginal melanoma] at the margins and its clinical implications.” [PMID 37711973]
- “...this represents the **largest series of subcutaneous LMS** [leiomyosarcoma] thus far reported in the literature.” [PMID 37727934]
- “This is the **largest multi-institutional series in the literature** to date focused on evaluating the incidence of a HN [head and neck] cancer diagnosis after initial GP [globus pharyngeus] presentation.” [PMID 37737553]

EMERSE and NLP

- Goals
 - Incorporate more information in the index including negation, uncertainty, subject, name entity recognition/concept identification
 - Expose more of the underlying search capabilities to users
 - Improve the user interface for term management
- Approach
 - Substantial improvements to the user interface
 - Layered index

EMERSE and NLP

- Layered index example

Original sentence:

His mother had stage IV metastatic colon-cancer that possibly metastasized, but was not found in the liver.

Conceptual Index Structure:

Position	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
Case-insensitive	his	mother	had	stage	iv	colon	cancer	that	possibly	metastasized	but	was	not	found	in	the	liver
Case-sensitive	His	mother	had	stage	IV	colon	cancer	that	possibly	metastasized	but	was	not	found	in	the	liver

EMERSE and NLP

- Layered index example

Original sentence:

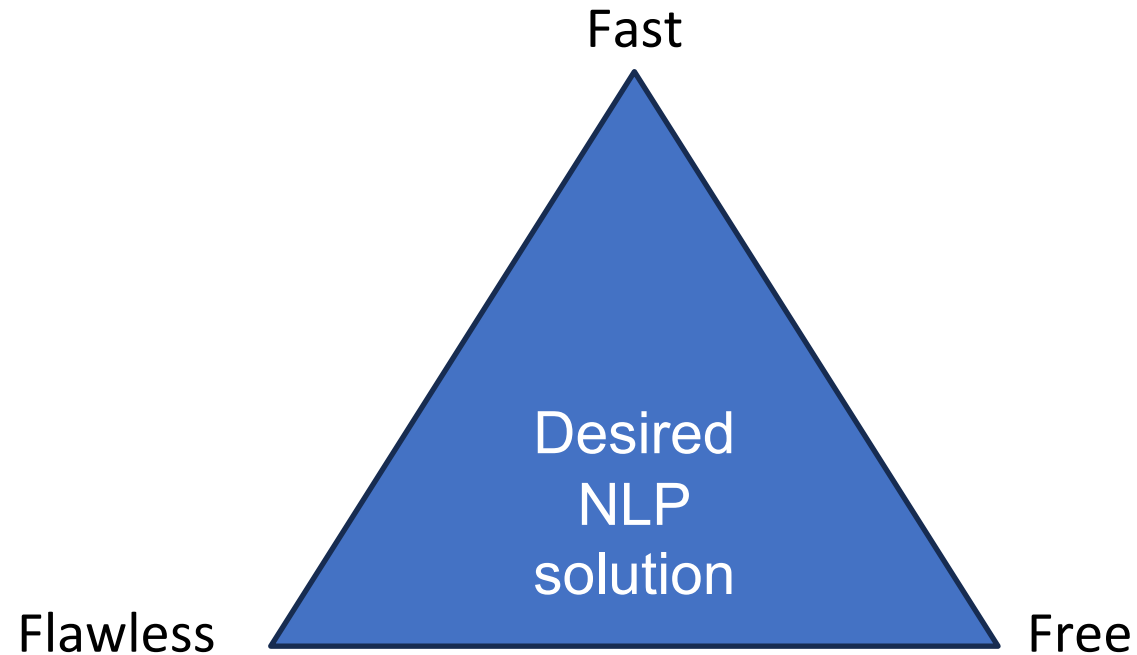
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Conceptual Index Structure:

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Case-sensitive	His	mother	had	stage	IV	colon	cancer	that	possibly	metastasized	but	was	not	found	in	the	liver
Negation (N = negated)													N	N	N	N	N
Uncertainty (U = uncertain)									U	U							
Subject (O = other; non-patient)		O	O	O	O	O	O	O	O	O							
Concept		C0026591		C4525128 C1336421	C4525128 C1336421	C4525128 C0007102 C0009368	C4525128 C0007102 C0006826			C0027627							C0023884
Semantic Type		Subject		Finding	Finding	Anatomy	Disorder			Finding							Anatomy

EMERSE and NLP – Three “Fs” of NLP

Fast, Good, Cheap Rule → Fast, Flawless, Free



EMERSE and NLP

- Work completed to-date
 - Functional prototype (including plain text and HTML formatted notes)
- Work still to do
 - Indexing speed tests when scaled up
 - Saving terms with new options
 - Incorporating local/custom NLP (BYON model: Bring Your Own NLP)
 - Enabling across network
 - Data extraction
- Demo

EMERSE and NLP

- Interested in testing the demo and providing feedback?
 - Email EMERSE-team@umich.edu for an account

Administration, Architecture and Technology

- Other work in progress
 - Admin filters to limit access to certain users
 - Seems simple, but very challenging
 - Saving/sharing filters
 - Filters across the network (not yet begun)
 - API with audit trails

Administration, Architecture and Technology

- Open discussion
 - Questions?
 - Comments?

Wrap up

- THANK YOU
- Next Meeting: TBD (Jan/Feb 2024)
- Please complete meeting survey:

