

Cancer Biomarkers AI and Bioinformatics Workshop Planning Call - #3

Date: February 26, 2024

Time: 1:00 PM - 2:00 PM PST

Attendees:

- Daniel J. Crichton (NASA JPL)
- Ziding Feng (Fred Hutchinson Cancer Research Center)
- Matthew B. Schabath (Moffitt Cancer Center)
- Christos Patriotis (NIH/NCI)
- Amanda Skarlupka (NIH/NCI)
- Jennifer Ellen Beane-Ebel (Boston University)
- Zhen Zhang (Johns Hopkins University)
- Eugene Koay (MD Anderson Cancer Center)
- Anirban Maitra (MD Anderson Cancer Center)
- Ashish Mahabal (Caltech)
- Heather Kincaid (NASA JPL)
- Chad He (Fred Hutchinson Cancer Research Center)
- Sudhir Srivastava (NIH/NCI)
- Nick Hodges (NIH/NCI)
- Steven J. Skates (

Agenda:

- **Venue and Meeting Date**
- **Proposed Tasks**
- **Review Workshop posting on EDRN Portal**
- **Hackathon**

Action Items:

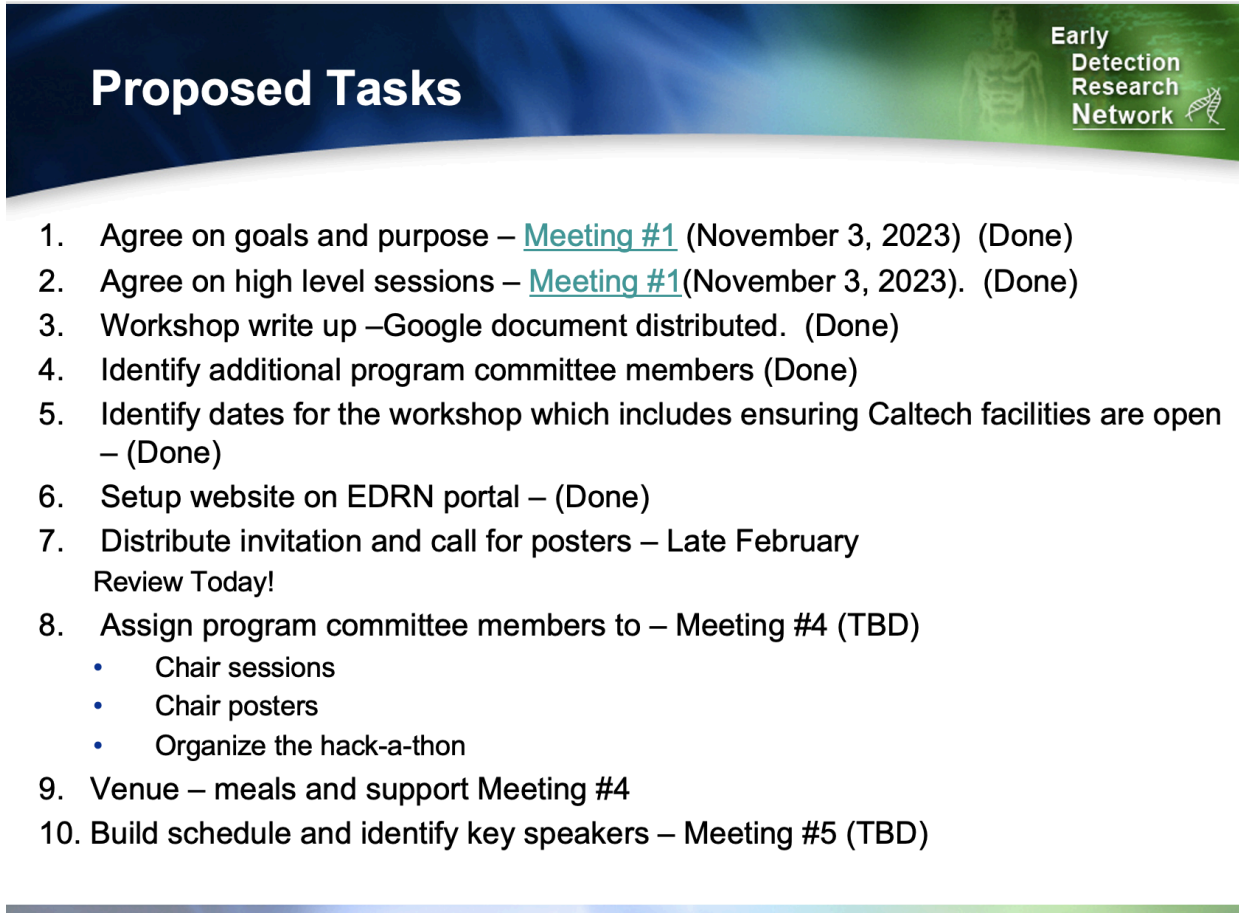
- Review and provide feedback on [Workshop Posting](#) on EDRN Portal - All
- Develop list of common terms to handout and post on workshop page - Ashish
- Distribute a Google Sheet to capture potential speakers and recommendations for sessions/themes - Heather
- Send link for workshop to Sudhir that he invite HTAN investigators
- Develop list of possible hackathon data and distribute to group for feedback - Ashish

Meeting Notes:

The date and venue have been set -> August 13 - 15, 2024 at Caltech, Pasadena

- The meeting will be hybrid.
- The current plan is to hold a poster reception the first day
- Logistics such as airports, hotels, etc. will be coming soon.

Proposed Tasks slide reviewed by Dan:



Proposed Tasks

Early Detection Research Network

1. Agree on goals and purpose – [Meeting #1](#) (November 3, 2023) (Done)
2. Agree on high level sessions – [Meeting #1](#)(November 3, 2023). (Done)
3. Workshop write up –Google document distributed. (Done)
4. Identify additional program committee members (Done)
5. Identify dates for the workshop which includes ensuring Caltech facilities are open – (Done)
6. Setup website on EDRN portal – (Done)
7. Distribute invitation and call for posters – Late February
Review Today!
8. Assign program committee members to – Meeting #4 (TBD)
 - Chair sessions
 - Chair posters
 - Organize the hack-a-thon
9. Venue – meals and support Meeting #4
10. Build schedule and identify key speakers – Meeting #5 (TBD)

Review of [Workshop Posting](#) on EDRN Portal

Call for Posters - Review of the themes

Theme ①: In Silico and Real World Biomarker Discovery and AI

Covering topics from methodology to application to verification.

Cancer biomarker discovery — use cases and applications of AI

Biomarker data (knowledge) Integration: imaging, radiomics, high dimensional data (Proteomics's, genomics, epigenetics, etc.)

Showcasing datasets for AI/ML — real world data, synthetic data, and simulated data

Theme ②: Biomarker Computation and Methodology Considerations for applying AI

Uncertainty, Statistical Rigor, Bias Considerations in AI/ML

Statistical methods vs AI considerations: optimal approaches to enable data analysis

Trust in ML methodologies for cancer biomarkers: Explainability, Reproducibility, Interpretability, etc of results

Theme ③: Considerations in Data Preparation, Sharing, and Analysis

Creating AI ready datasets: Data Preparation, harmonization and standardization

Making data usable: Data capture, sharing, federation, and scalable computation for cancer biomarkers

Open Science to link AI algorithms and data ready datasets to publications

Ethical considerations with data and AI/ML

Theme ④: Emerging Capabilities and Methodologies in AI

Novel and emerging methods for image analysis

LLMs/Foundation Models, Generative AI, Federation/Federated Learning

Theme ⑤: Academic-Industry Partnerships in AI and Bioinformatics

Including topics on technology transfer and mutually beneficial relationships.

Discussion and items to consider:

- AI and ML panel discussion to communicate the philosophical differences between AI computer scientists and biostatisticians. Translate terms from one discipline to another and philosophical differences. Focus is AI and want to inform the community.
- Create list of AI/ML terms
- How much emphasis should the workshop have on using BIMAC to solve clinical problems or the other way around use AI approach to help the discovery process and also some of the BIMAC development process.
- AI can aid in novel ways to apply. 1. start with a hypothesis and use data to see if it's correct or, 2 if you have a lot of data, look for patterns and then help generate your hypothesis.
- The Theme 5 - Academic-industrial partnership provocative session and could go in many different directions. Limited precedence for it, so are we considering prioritizing bringing in some industrial partners that may be interested or already doing it? IP experts. Maybe roundtable type rather than presentations.

- Consider identifying a few speakers that can participate to discuss what's emerging from industry that could be taken advantage of. Or open that up to posters that can be presented. Great to stress that partnerships between academia and industry where there's been a successful result, not just marketing.

Hackathon

- Develop a list of potential datasets available for feedback from the group

- Once the agenda is in good shape, reach out to the publishing company to publish proceedings.
- Paper on how to bring together traditional science vs computational models.
- Brochures for AACR in San Diego