Children's Hospital of Philadelphia
RESEARCH INSTITUTE

Pilot Award

The CHOP Research Institute is soliciting internal grant applications to stimulate research using novel methods such as geospatial analysis, and natural language processing that will attract external support for larger-scale studies. In partnership with Arcus, the Clinical and Translational Science Award (CTSA), and the Data Science and Biostatistics Unit (DSBU), selected proposals will be for Arcus and DSBU training and analytic support for up to a maximum of $25,000 for one year. Projects should be able to be completed within one year.

The goals of this initiative include:

- Analysis of existing geospatial and text data with a translational relevance to clinical care, with the potential to add data to Arcus
- Collaboration across divisions or departments to merge different data types in ways that strengthen existing projects or open new research opportunities
- Leveraging Arcus resources to achieve study aims

Eligibility

Faculty and instructors from all CHOP departments and divisions are encouraged to apply. We will also consider funding research scientists, and research fellows.

Key Dates

- Letters of Intent due- November 13, 2023 at 12:00 pm ET
- Invited full proposals due - December 18, 2023 at 12:00 pm ET
- Anticipated research, education, and data contribution- January 2024- December 2024
- Awardee Presentations- December 2024

Content Areas

Natural Language Processing (NLP)

NLP is a discipline spanning computer science and linguistics that attempts to process and reason over free text. It encompasses everything from relatively simple pattern matching to the latest deep learning techniques. NLP can be used to classify documents, identify entities of interest within text, find answers to a question within a document or even generate text given a starting point. Within health care informatics, NLP is an integral part of understanding the patient's entire medical history as not all information is recorded in discrete fields.

Example Research Questions:

- Can I identify a cohort for biomarker evaluation based on provider notes related to medication efficacy, reactions, or adverse effects?
- Can I identify a condition that isn't well captured by ICD codes by using clinical notes?
- Can I identify hard-to-diagnose cases of my condition of interest by looking at provider notes and comparing provider date of dx with bellwether lab value dates?

- Can I define a new outcome measure based on clinical notes?
- Can I stratify a complex condition based on phenotypes derived from clinical notes?
- In my cohort of interest, is there disparity in the sentiment (tone) of clinical notes, based on geography, race, sex, or other potential sources of human bias?

Geospatial Analysis (GIS)

Geographic Information Systems, or GIS, is an integrated system of software, hardware, data, and personnel. GIS provides a framework that organizes information around the concepts of geographic location. It is an integral part of the public health toolbox and helps answer questions and solve problems in a way that can be quickly understood and easily shared.

Example Research Questions:

- Are children who live in neighborhoods that are in close proximity to environmental hazards (interstate corridors or high-lead soil areas) at greater risk for my condition of interest?
- Is there evidence of geographic disparity in diagnosis, time to diagnosis, referrals, or treatment in my condition of interest? Is their access to care and resources equitable?
- To what degree are my patients who are geographically at higher risk (due to neighborhood deprivation / SDH) at higher risk for non-compliance in follow-up appointments, medication adherence, etc.?
- Is there a relationship between neighborhood-level risks (crime, food environment, social disorganization) and a particular outcome for my cohort of interest?
- Can I identify patients with increased instability (address changes) and measure impact to their health?
- Are there any spatial or spatiotemporal patterns that are related to a particular diagnosis?
- What natural, social, and built environmental factors impact a particular health outcome? Do these factors impact neighborhoods differently?

Training

As part of this pilot award investigators will receive training at various stages.

Selected applicants chosen to advance at the letter of intent stage will be asked to attend a 90 minute recorded webinar on Monday, December 4, from 10:00 – 11:30 am Eastern, which will include training aimed at helping them create well-scoped and competitive applications. At this stage, applicants will also have access to office hours and 1:1 question and answer sessions to help them craft their full applications.

Successful applicants who receive this grant will also be asked to attend specialized training throughout the time frame of the grant period, covering topics related to the Arcus platform, research data lifecycle, statistical methods, and advanced research methods for text and geospatial data.

Data Contribution

As a part of this initiative, it is expected that you will contribute data at the end of your project. The Library Science team at Arcus, specifically the Digital Archivists, will meet with you in the initial phases

of your project to provide you with a thorough introduction to the process of data contribution. This process includes a Data Contribution Guide.

Application

Letters of intent (LOI) are due **at 12:00pm ET on November 13, 2023.** LOI should include a concise description of your proposed project, how you plan to utilize data from this opportunity to support future grants, and experience with Arcus, or NLP or GIS methodologies. Experience is not required for funding (template below). Submit LOIs to Donna Vito (VitoD@chop.edu).

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ARCUS AND DSBU PILOT AWARD LETTER OF INTENT

Guidelines

1) *Due November 13, 2023 at 12pm E.T.*
2) ***Format:***
    a. *Signed letter placed on official letterhead of PI institution/department*
3) ***Content:***
    a. *Address all fields below*
4) *When letter is complete:*
    a. *Copy text onto official letterhead of Contact PI*
    b. *Save file as "Last name Letter of Intent" and email to* VitoD@chop.edu

October 2, 2023

RE: Arcus, DSBU, and CTSA Pilot Award

Dr. Roberts,

We are submitting this letter of intent to indicate our plans to submit a proposal for the above referenced RFA. The requested LOI information is listed below.

Project Title:
Participating Department(s):

The Contact Principal Investigator is:
NAME, Title, Institution. Address; Phone Number.

Multi-PI(s)/ Additional Key Personnel will be:
Name, Title, Department
Name, Title, Department

CONTENT: 1 Goals/aims/relevance
2 How you plan to utilize results to attract external support
3 Past experience with Arcus, NLP, or geospatial analysis, if any

Sincerely,

[**INSERT SIGNATURE BLOCK OF CONTACT PI**]