



Connecting CMU Researchers to Current Grant Opportunities

By: Divya Rao, Pam Sun, Lisa Zhang
Advisor: Peter Freeman

Carnegie Mellon University
Libraries

Aim

- In Fall 2020, a group of CMU Statistics & Data Science undergraduates developed a data exploration tool to explore and analyze data on grant funding involving CMU researchers. As an extension to this work, we are interested in building a data recommendation system that matches previously funded CMU researchers (as documented in one database) to future grant solicitations (as provided in another).
- We utilize the `Dimensions` (previously funded) and `GrantForward` (future solicitations) databases.

Data

- The data were provided by Neelam Bharti, Huajin Wang, and Sarah Young of the CMU Libraries.
- The `Dimensions` dataset is a subset of 6,326 previously funded research grants affiliated with CMU from the `Dimensions AI` database. This dataset consists of information about the grants such as title, abstract, funding amount, start/end date, researchers, funder/funding group, resulting publication, grant URL, and categorizations. We leverage the data from six categorization systems to generate the subject list we use when matching across datasets.
- The `GrantForward` dataset is a subset of 2,856 currently available research grant opportunities with solicitations from September to October 2021. This dataset consists of information such as title, description, sponsors, funding per grant, grant URL, and subject.

Matching Opportunities to Researchers

Input: Name of Grant Opportunity

- Use `subject` column to obtain specific topics, and more generalized ones with fuzzy matching
- Create a list of related researchers through the matching of obtained topics to category columns in dataset
- For each related researcher, quantify the correlation between the words in the grant description, publication description, and researcher abstract
- Rank the list of related researchers based on word-wise correlation and return the top ten matching researchers, along with related information

Output: Researchers

Future Work

- As mentioned above, our recommendation system currently uses a subset of data from the `GrantForward` database. In the future, we aim to tie our recommendation system to the `GrantForward` database by utilizing its API.

Grant Opportunities by Category

List of relevant main and subcategories

Relevant Categories

Category:

related_categories

- Chemical Engineering
- Civil Engineering
- Computer Engineering
- Electric Engineering
- Engineering
- Environmental Engineering
- Industrial Engineering
- Materials Engineering
- Mechanical Engineering

Grant Opportunities by Category

Category	Submission Deadline (y/m/d)	Earliest Submission Date	Submission Deadline
Chemical Engineering	21/04/21		
Latest Submission Deadline of the Category: Chemical Engineering is 2021/09/28			
Title	Sponsors	Earliest Submission Date	Submission Deadline
Multiple Disciplines, Estonia	U.S. Department of State	2021/02/04	2021/09/15
All Disciplines, Ethiopia	U.S. Department of State	2021/02/04	2021/09/15
Fulbright-Lancaster University Scholar Award (STEM Science and Technology), United Kingdom	U.S. Department of State	2021/02/04	2021/09/15
All Disciplines, Latvia	U.S. Department of State	2021/02/04	2021/09/15
Fulbright Aalto University Distinguished Chair (Business Studies and Electrical Engineering), Finland	U.S. Department of State	2021/02/04	2021/09/15

Grant opportunities filtered by input subcategories and submission date

Information of specific grant opportunity (source URL, amount, and description)

Information of Specific Grant Opportunity

Grant Title:

Show: 25 | 1 entries

Information

Source URL: https://www.grantforward.com/grant_id/48942

Amount: NUMBER OF RECIPIENTS UP TO 3 TEACHING OR TEACHING/RESEARCH ASSISTANT PROFESSOR OR BELOW MONTHLY STIPEND AND ALLOWANCES \$4,040-\$4,500 TEACHING OR TEACHING/RESEARCH ASSISTANT OR FULL PROFESSOR MONTHLY STIPEND AND ALLOWANCES \$4,240-\$4,810 ESTIMATED TRAVEL AND RELOCATION ALLOWANCE \$3,750-\$8,750 ESTIMATED BOOK AND RESEARCH ALLOWANCE \$750 books and educational materials allowance, should be donated to the host institution (or other entity) upon grantee's departure. SEPARATE TUITION ALLOWANCE Reimbursement for dependent education expenses may be available on a limited basis, depending on funding availability and grant duration. Grantees should confirm with III that proposed expenses meet eligibility criteria; however, availability of funds may not be known until the end of the academic year. Please refer to the figures above for an estimate of total monthly Fulbright award benefits. Benefits may include a monthly base stipend, living and housing allowances, and additional one-time allowances. Benefits vary based on a scholar's current academic rank (or professional equivalent), the city of placement, the type of award (teaching, research, or research), and the number of and duration of stay of accompanying dependents. Research-only grantees receive a standard stipend that is not adjusted for academic rank. In most cases, dependent benefits will not be provided for those grantees, or to grantees pursuing grants less than four months (or a semester) in length. Final grant amounts will be determined prior to the start of the academic year and are subject to the availability of funds. The United States Department of State reserves the right to alter, without notice, participating countries, number of awards and allowances.

Description: Award Activity The Scholar is expected to teach courses to undergraduate and graduate students (the exact hours, teaching load, and responsibilities will be negotiated directly with the host institution), perform collaborative research in cooperation with the host institution, and upon request of the host, provide advice for professional curriculum building, student advising, and supervision. For teaching/research grants, no less than 30% of the grant activity should be dedicated to teaching or teaching-related activities. Scholars selected for this grant will be required to attend mandatory Pre-Departure Orientation in Summer 2022. Fulbright U.S. Scholar in Estonia, Brenda Marton with her students, 2017-2018 Scholars selected for this award can choose to: Advise and/or mentor students; Assist in faculty, curriculum, and/or program development; Conduct a professional and/or artistic project; Conduct a research project of the applicant's choosing; Teach graduate and/or undergraduate courses designated by the host institution; Teach graduate and/or undergraduate courses of the applicant's choosing; Award Length Three to nine months; Award Dates One-semester grants must begin in either September 2022 or February 2023.

In Progress: Matching Researchers to Opportunities

Input: Name of Researcher

- Use category columns to obtain specific topics and generalized ones with fuzzy matching
- Obtain a list of related grant opportunities based on the matching of topics
- For each related grant opportunity, quantify the correlation between the words in the grant description and researcher abstract
- Rank the list of related grant opportunities based on word-wise correlations obtained and return the titles, URLs, and correlation values for reference

CMU Researcher Matching

CMU Researcher Name

Output: Grant Opportunities

References

- Dimensions*, <https://www.dimensions.ai/>.
- "GrantForward." *GrantForward Search Engine | Search for Federal Grants, Foundation Grants, and Limited Submission Opportunities*, <https://www.grantforward.com/index>.
- Robinson, Julia Silge and David. "Welcome to Text Mining with r: Text Mining with R." *Welcome to Text Mining with R | Text Mining with R*, <https://www.tidytextmining.com/index.html>.
- The Fall 2020 Project: <https://www.youtube.com/watch?v=ijZXBx82ExA>