

# Proactive approaches to research security

August 2, 2023

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**Lisa Dougherty**, Chief Operating Officer, Academic Analytics

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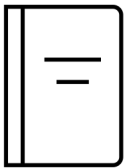
**Jonathan Fink**, Business Development Manager, Academic Analytics

*Follow up contact: Matthew Cooper — [mcooper@academicanalytics.com](mailto:mcooper@academicanalytics.com)*



# What is Academic Analytics?

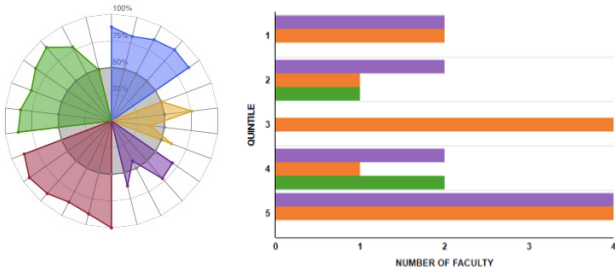
2005 – 2009



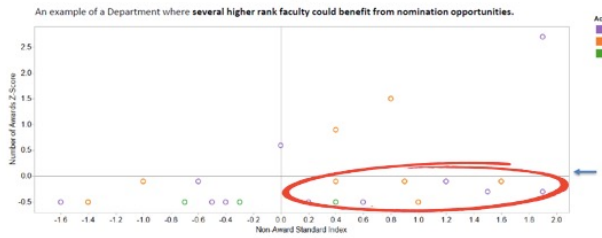
First annually updated inter-institutional comparisons of scholarly activity

2010 – 2015

Unit-level peer analyses and trends by academic rank



Tools for faculty equity and recognition



2016 – 2022

International collaborations and international funding



Collaborative networks and expertise search



Global alumni location and employment

2023

*Your current input needed*



**Research security**

# True Scenario: Research Security

- Endowed Professor of Civil Engineering with 18-year tenure at University
- Was a US citizen who grew up in China
- Renowned for his work with NASA on the 2003 and 2009 Mars missions
- In January 2014 submitted a \$36M proposal to NASA for imaging work on the 2020 Mars mission, claiming he had no ties with Chinese scientists
- He had spent 2012 on sabbatical at Tongji University in Shanghai
- University internal investigation started.
- He was listed as director of center for spatial information in China and had served as chief scientist there for a project
- In February 2014, he withdrew from the Mars 2020 project and days later resigned from the University, all from China.
- University working with FBI - he had access to ITAR information with NASA and Raytheon
- In March 2014, DHS stopped his wife at airport and seized laptop, cell phone and thumb drives, all with restricted defense information
- **How could the University have been more proactive?**

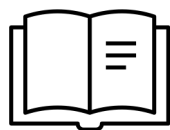
## Goals:

- Empower your team to become **more proactive** in identifying foreign influence
- **Create efficiencies** for your research security team
- **Increase the impact** of your outreach, education, and compliance efforts

*easier to obtain/verify* ←

# Faculty Information

→ *difficult to obtain/verify*



## Publications

Journal articles  
Conference proceedings  
Books  
Book chapters



## Funding

US federal grant funding  
PIs and Co-PIs  
Foreign funding



## Clinical trials



## Unique expertise

Semantic analysis  
Topic modeling



## Prestige

Honorifics  
Awards and prizes  
US and international



## Career progression

History and trajectory  
Relative to peers  
Where were they trained?



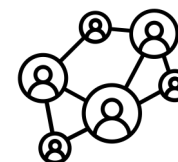
## Former students

Current employment of  
doctoral trainees and post-docs



## Technology

Patents  
Co-inventors



## Connections

International collaborators  
Current and historic

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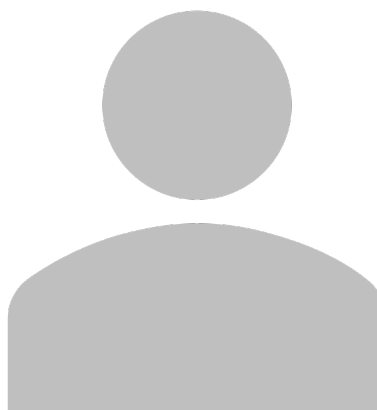
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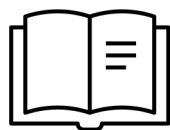
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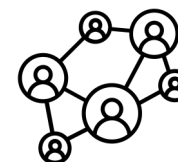
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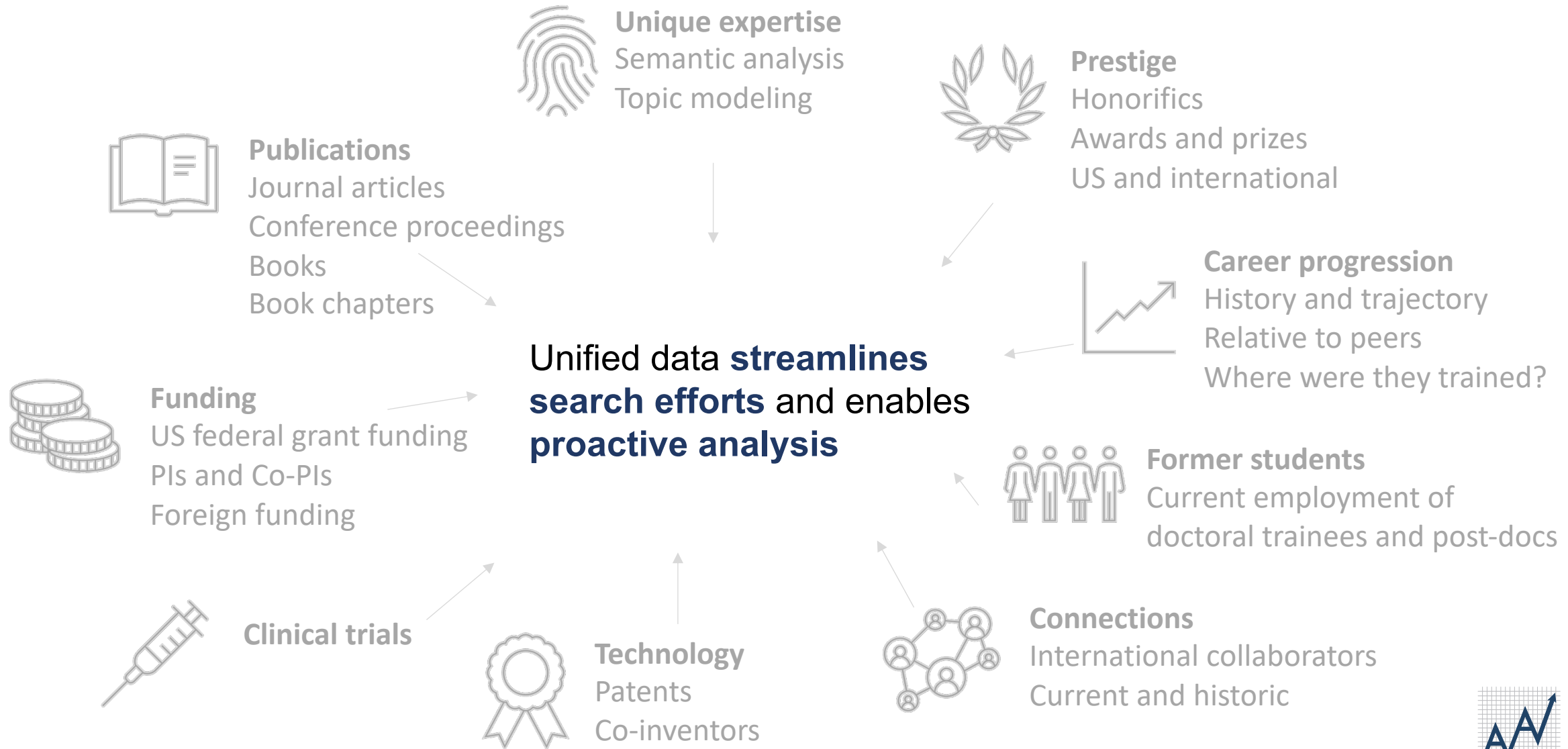
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Foreign military research  
priority areas?



**Unique expertise**

Semantic analysis  
Topic modeling



**Publications**

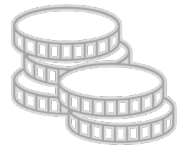
**Journal articles**

Conference proceedings

Books

Book chapters

Author affiliations



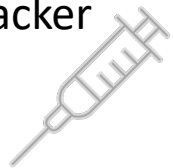
**Funding**

US federal grant funding

PIs and Co-PIs

**Foreign funding**

China Defense  
Universities Tracker



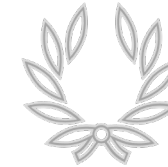
**Clinical trials**



**Technology**

Patents

Co-inventors



**Prestige**

**Honorifics**

Awards and prizes  
US and international

Foreign “gateway” awards

Highest value  
targets



**Career progression**

**History and trajectory**

Relative to peers

**Where were they trained?**

China Defense University Tracker



**Former students**

Current employment of  
doctoral trainees and post-docs



**Connections**

**International collaborators**

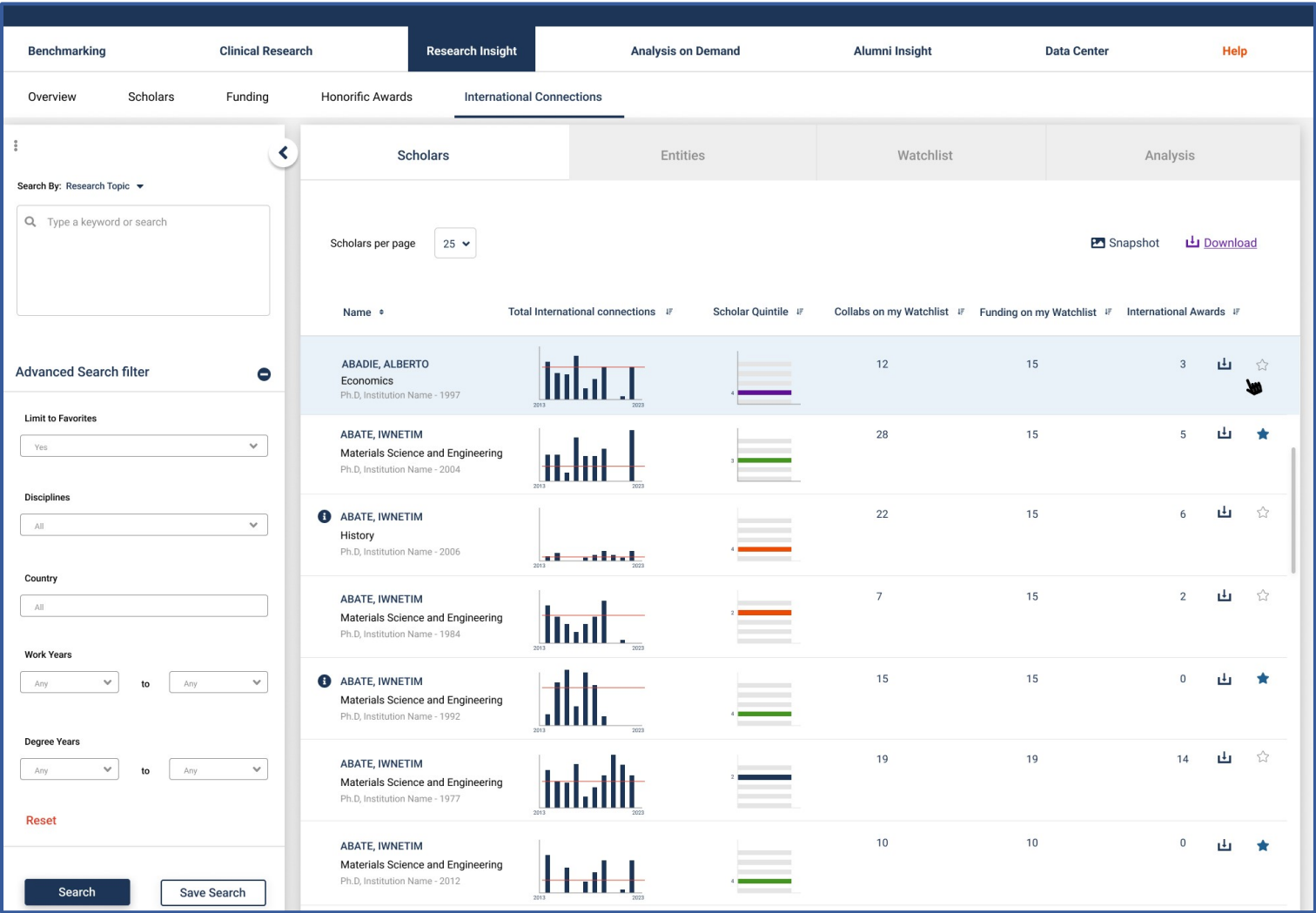
Current and historic

Known watch List

Unified data **streamlines**  
**search efforts** and enables  
**proactive analysis**  
with **additional critical**  
**intelligence**

# Tools Overview - Scholars Tool

*The **Scholars Tool** offers search functionality with various filters. It provides a listing of persons with multiple metrics and allows drill-down analysis.*



## SEARCH TOOL

### Menu

- Saved Searches
- Saved Favorites

### Keyword Search

- Search by Topic
- Search by Person Name

### Search Filters

#### Limit To Favorites

*Favorites can be selected in the search results grid.*

#### Disciplines

*Will only return persons from the selected discipline(s).*

#### Country

*Will only return persons with connections to the specified country(s).*

#### Work Years

*Will only consider activity records within the specified date range.*

#### Degree Years

*Will only consider persons within the specified date range.*

## RESULTS GRID

Columns (all columns are sortable)

### Name

*Clicking on the name will open the person's details (see more below).*

### Total International Connections

*Displays the last ten years of observed international connections in a histogram format.*

### Scholar Quintile

*An overall productivity metric based on Aca's SRI and broken out by faculty rank.*

### Collabs on my Watchlist

*The number of co-author affiliations with entities on the user's watchlist.*

### Funding on my Watchlist

*The number of funding acknowledgments with entities on the user's watchlist.*

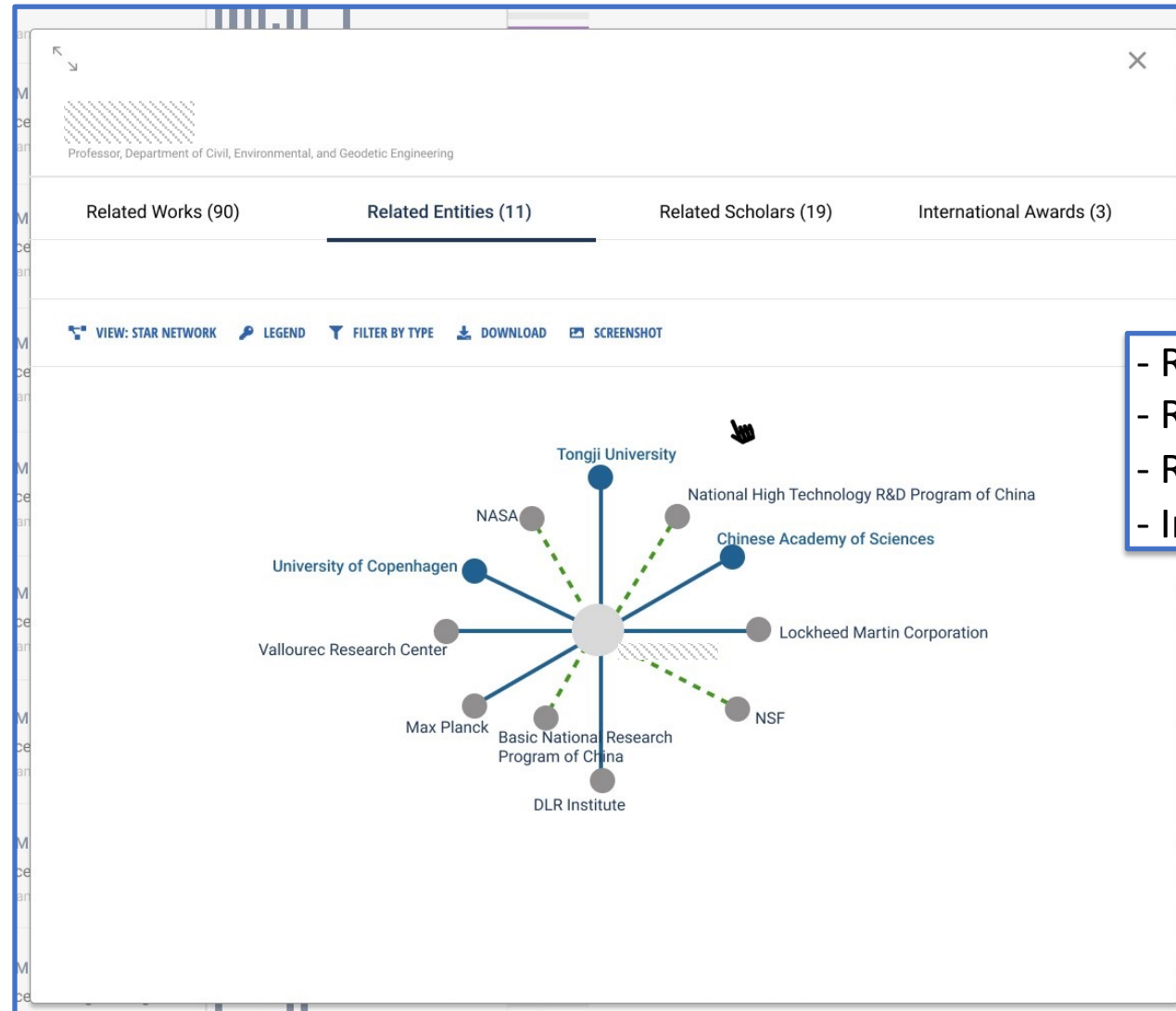
### International Awards

*The total number of international honorific awards.*



# Tools Overview - Scholars Tool

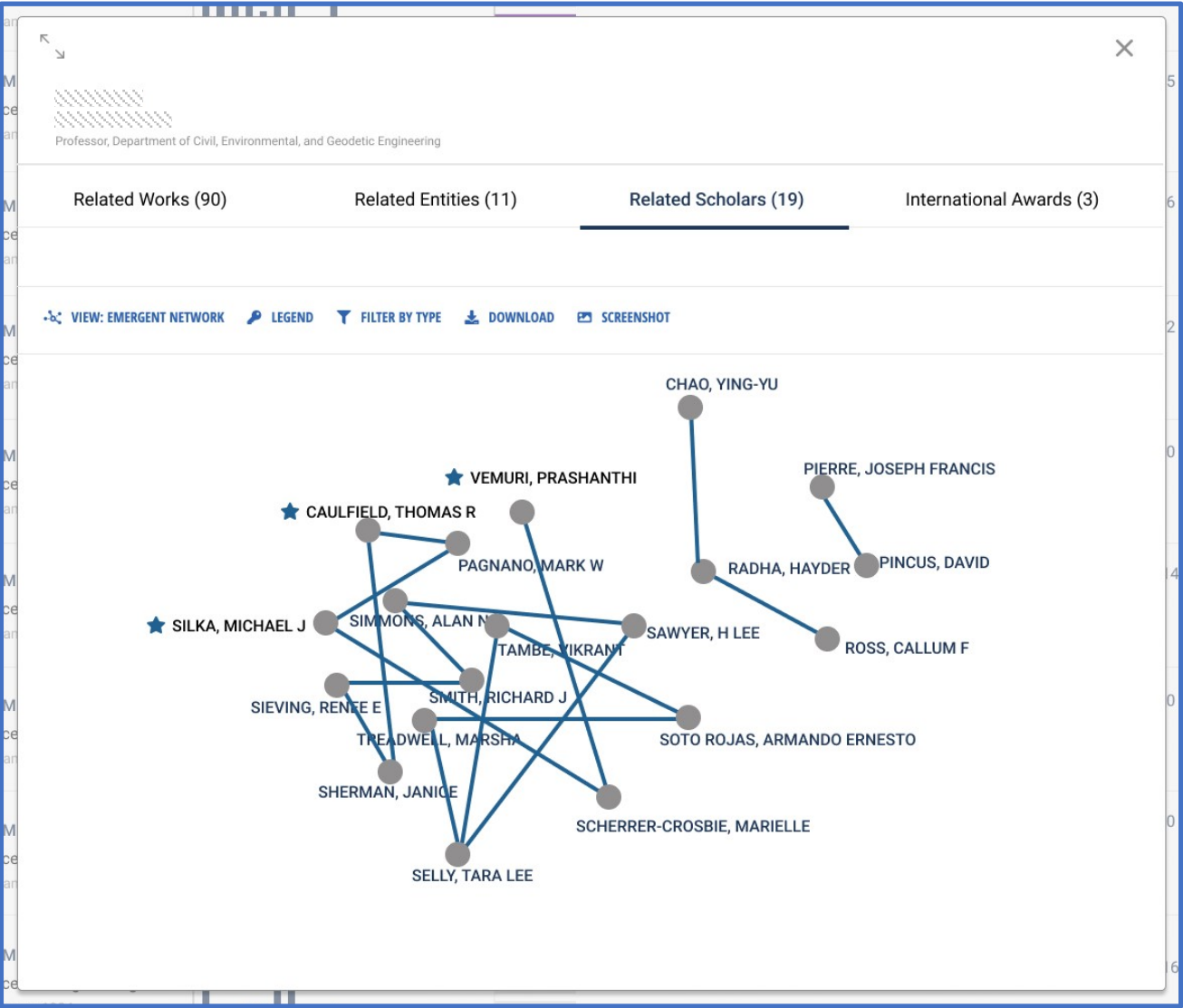
**Scholar Detail** - Clicking on an individual's name in the tool grants access to the Scholar Detail screen. This screen offers 4 displays: **Related Works**, **Related Connections**, **Related Scholars** and **International Awards**.



- Related Works
- Related Entities
- Related Scholars
- International Awards

# Tools Overview - Scholars Tool

## Scholar Detail – Related Scholars



# Tools Overview - Scholars Tool

## Scholar Report

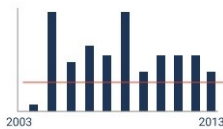
### Current Position

Professor, Department of Civil, Environmental, and Geodetic Engineering

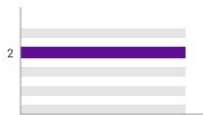
### Terminal Degree

Ph.D. in photogrammetry and remote sensing ,  
Technical University of Berlin

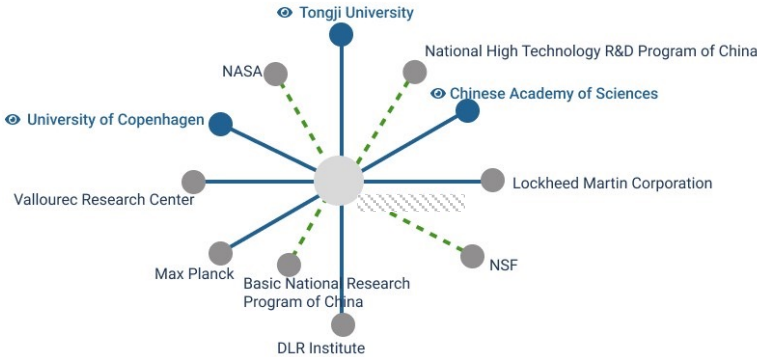
### Total International Connections



### Scholar Quintile



### Related Connections



### Related Works

#### Articles :

S. W. Squyres et al. ,Ancient Impact and Aqueous Processes at Endeavour Crater, Mars.Science  
336,570-576(2012).DOI:10.1126/science.1220476

J. A. Grant et al. ,Surficial Deposits at Gusev Crater Along Spirit Rover Traverses.Science305,807-810(2004).  
DOI:10.1126/science.1099849

# Tools Overview - Entities Tool

The Entities Tool allows users to search and browse the entire catalog of global entities. Each entity can be further examined with on-screen analysis and added to the user’s watchlist.

Benchmarking

Clinical Research

Research Insight

Analysis on Demand

Alumni Insight

Data Center

Help

Overview

Scholars

Funding

Honorific Awards

International Connections

Search By: Entity Name

Q

Type a keyword or search

Advanced Search filter

Country

Country Name

Work Years

Any

to

Any

Reset

Search

Save Search

Scholars

Entities

Watchlist

Analysis

Entities per page25

Name	Country	Number of Collaborators	Number of Funding Recipients	
Bigfoot Biomedical	USA	12	15	<div>Add to Watchlist</div>
Sun Yat-sen University	China	28	15	
Wellcome Trust	GBR	22	15	
Tianjin Polytechnic University	China	7	15	
Regeneron	USA	15	15	
Tongji University	China	18	2	
IBM Watson Health	USA	10	10	
University of Electronic Science and Technology of China	China	30	10	
Facebook	USA	22	12	
AstraZeneca	GBR	4	12	
University of Chinese Academy of Sciences	China	85	10	
Tsinghua University	China	19	10	

## Search Tool

### Menu

Saved Searches

### Keyword Search

Search by Topic

Search by Person Name

### Search Filters

#### Country

Will only search upon entities with a location in the specified country(s).

#### Work Years

Will only consider activity records within the specified date range.

### Results Grid

Columns (all columns are sortable)

#### Name

Name of the entity. Clicking on the name will open the entity details (see more below).

#### Country

The country in which Aca has identified the entity.

#### Number of collaborations

Total number of authors at the institution on papers where the entity was one of the identified affiliations.

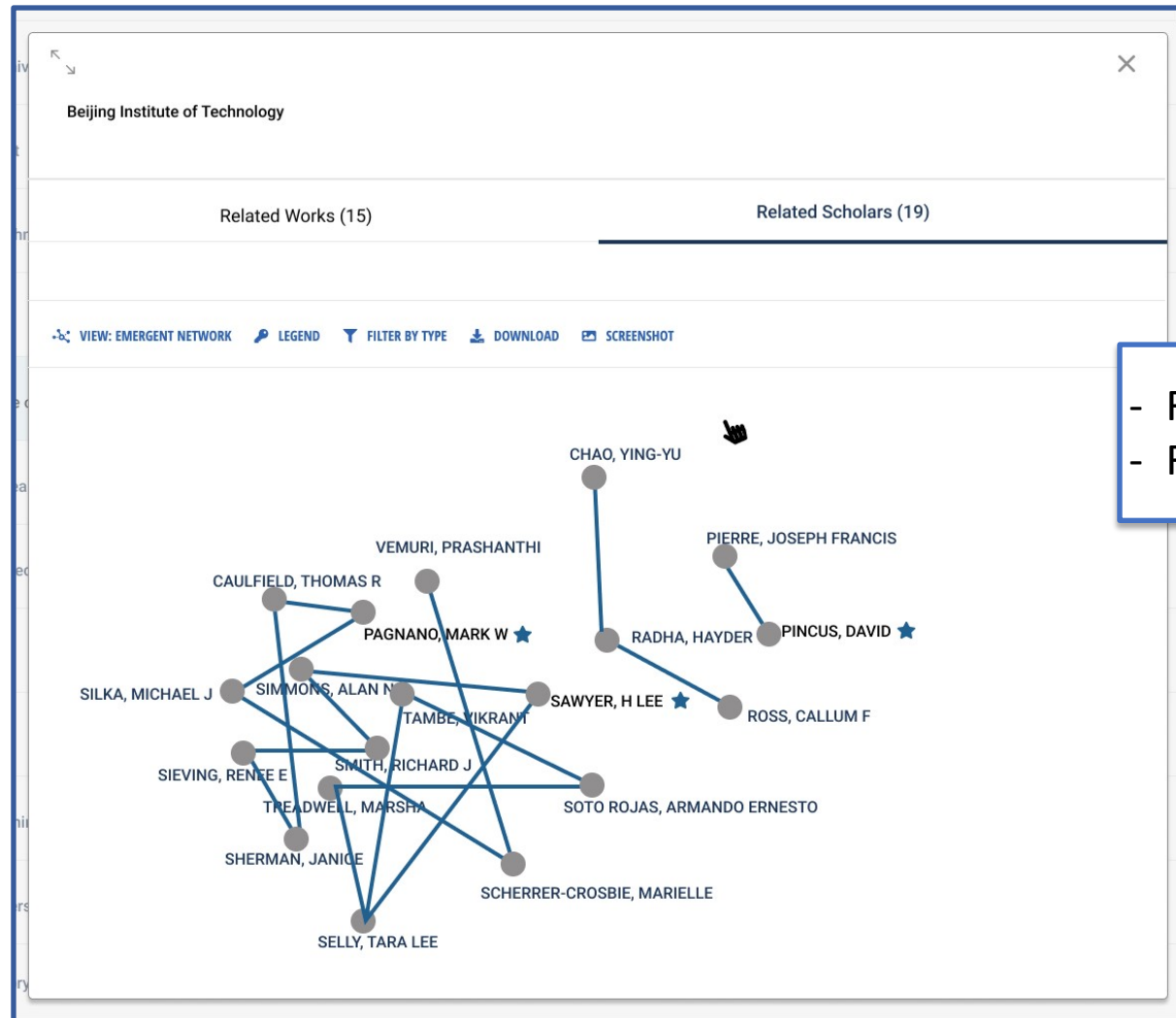
#### Number of Funding Recipients

Total number of authors at the institution on papers where the entity was identified in the funding acknowledgments.



# Tools Overview - Entities Tool

**Entity Detail** - Clicking on an entity name grants access to the Entity Detail screen with 2 displays: **Related Works** and **Related Scholars**. **Related Works** lists all works linked to the user's institution, while **Related Scholars** shows all researchers at the institution connected to the selected entity, visually representing their connections to each other in relation to the selected entity.



- Related Works
- Related Scholars

# Tools Overview - Watchlist Tool

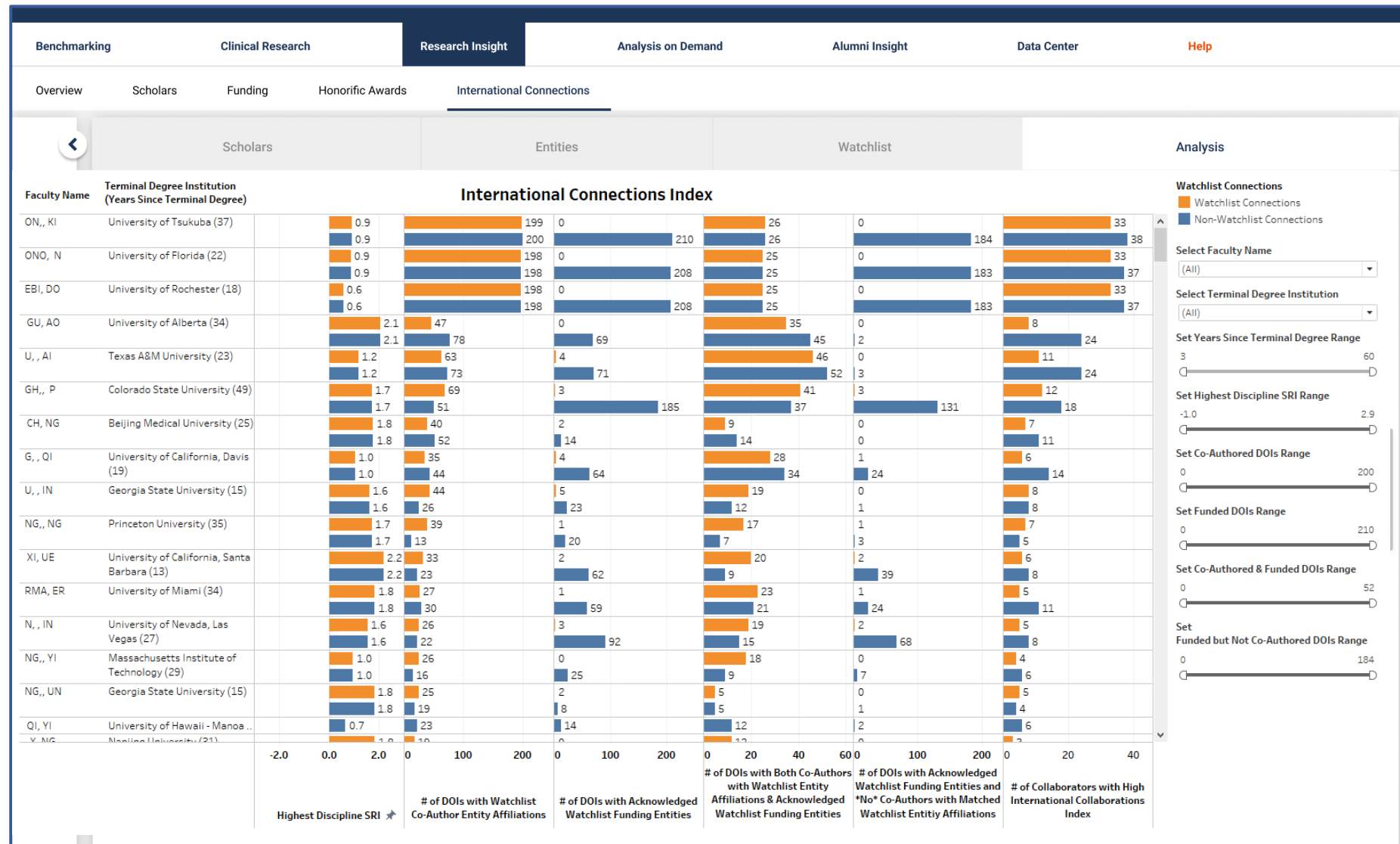
**The Watchlist Tool** lets users customize their list of preferred entities. Pre-built watchlists, maintained by AcA, are available to our users. Users can use these lists as-is or add them to their custom watchlist. The entities on the watchlist are then used throughout the product module.

The screenshot displays the 'Watchlist Tool' interface within the 'Research Insight' module. The top navigation bar includes 'Benchmarking', 'Clinical Research', 'Research Insight' (active), 'Analysis on Demand', 'Alumni Insight', 'Data Center', and 'Help'. Below this, a sub-navigation bar shows 'Overview', 'Scholars', 'Funding', 'Honorific Awards', and 'International Connections' (active). The main content area is divided into four tabs: 'Scholars', 'Entities', 'Watchlist' (active), and 'Analysis'. On the left, a search sidebar contains a 'Search By: Entity Name' dropdown, a search input field, an 'Advanced Search filter' section with 'Country' and 'Work Years' filters, and 'Search' and 'Save Search' buttons. The 'Watchlist' tab shows a 'My Watchlist' section with a list of entities: Sun Yat-sen University, Bigfoot Biomedical, Regeneron, Tsinghua University, University of Electronic Science and Technology of China, and Wellcome Trust. Each entity has a checkbox and a 'Share' button. A 'Browse Watchlist' section at the bottom shows two watchlists: 'Australian Strategic Policy Institute' and 'My Watchlist' (marked as 'New').



# Tools Overview - Analysis Tool

*The Analysis Tool offers pre-built Tableau dashboards.*



# Data Sources – Funding Example

*We are text mining the Funding Acknowledgements on each paper. Example below...*





The screenshot displays a journal article page with a dark blue header. The breadcrumb trail at the top reads: Home ► All Journals ► Geomatics, Natural Hazards and Risk ► List of Issues ► Volume 6, Issue 5-7 ► Some applications of 2-D and 3-D photogr .. Below the header, a navigation bar includes links for Full Article, Figures & data, References, Citations, Metrics, and Reprints & Permissions, along with a green 'View PDF' button. On the left, a sidebar titled 'In this article' lists sections 1 through 5, with 'Additional information' highlighted. The main content area features the heading 'Additional information' followed by 'Funding'. The funding text states: 'This study is supported by the 863 National High Technology Research and Development Program of China [grant number 2012AA121302]; the 973 Basic National Research Program of China [grant number 2013CB733204]; the National Science Foundation of China [grant number 41171327], [grant number 41201379]; the Specialized Research Fund for the Doctoral Program of Higher Education [grant number 20120072120057]. This research partially benefited from the support of the FIRB 2010 National Research Program of the Italian Ministry of University and Research (MIUR).' The 'Notes' section is partially visible at the bottom.

## Data Source – Collaborations Example

*We are text mining the author affiliations on each paper. Example below...*

### Photogrammetric processing of rover imagery of the 2003 Mars Exploration Rover mission

Kaichang Di<sup>a</sup>, Fengliang Xu<sup>a</sup>, Jue Wang<sup>a</sup>, Sanchit Agarwal<sup>a</sup>, Evgenia Brodyagina<sup>a</sup>,  
Rongxing Li<sup>a</sup>  , Larry Matthies<sup>b</sup>

<sup>a</sup> Mapping and GIS Laboratory, Department of Civil and Environmental Engineering and Geodetic Science, The Ohio State University, 470 Hitchcock Hall, 2070 Neil Avenue, Columbus, OH 43210, USA

<sup>b</sup> Jet Propulsion Laboratory, California Institute of Technology, Mail Stop 125-209, Pasadena, CA 91109, USA

## Goals:

- Empower your team to become **more proactive** in identifying foreign influence
- **Create efficiencies** for your research security team
- **Increase the impact** of your outreach, education, and compliance efforts



## ***Research Security & Foreign Influence Risk***

- ✓ Curated data and ability to drill down at the person unit level
- ✓ Predictive Analysis provides proactive ability to more efficiently hone in and identify target watch list
- ✓ Significant time savings for Research Security & Risk Assessment Offices
- ✓ Supports new compliance mandates NSPM-33
- ✓ Evolving based on real-time feedback

Follow up contact: Matthew Cooper — [mcooper@academicanalytics.com](mailto:mcooper@academicanalytics.com)

# Next steps:

1. Reaching out to get community feedback and your guidance
2. Webinar: Fall 2023 Research Security Executive Briefing: The Power of Data Integration

October 25  
12:00pm Eastern

Link in the chat to register, or use **QR code** >>

