Academic Contribution Registry

Business Requirements

Summary of Problem Statement - Nouns, Verbs

The Academic Contribution Registry is a database system designed to store, organize, and query structured records of research contributions across academic work. The system tracks which researchers have contributed to which publications, and what specific roles they performed in each work. Rather than relying solely on ordered author lists or free-text contribution statements, the system explicitly associates each researcher with a defined contribution role for a given publication.

Each publication may involve multiple researchers, and each researcher may contribute to multiple publications. Additionally, a single researcher may perform multiple roles within the same publication. These relationships must be explicitly recorded and maintained in a structured format.

The system allows users to search for publications by topic, identify researchers by their contribution roles, and analyze collaboration and workload distribution across a research group.

Primary users of the system include researchers, principal investigators (PIs), and administrators. Researchers use the system to find collaborators and review contribution records. PIs use the system to evaluate workload distribution and monitor collaboration patterns. Administrators use the system to generate reports and audit structured contribution data.

The system does not interpret publication content. It only stores structured metadata explicitly entered into the system.

Key Nouns & Verbs

Nouns - Researchers, Roles, Contribution, Publications, Topic, Principal Investigators(PI's), Administrators

Verbs - Store, Organize, Query, Associate, Record, Maintain, Search, Identify, Analyze, Find, Review, Evaluate, Monitor, Generate, Audit

Extracting Classes

- Researchers - name, email_address, ORCID_identifier, institution, department, academic_title
- Publications - title, abstract, publication_year, publication_date, digital_object_identifier (DOI), venue_name, publication_type (journal, conference, preprint), status (published, under review, draft)
- Roles - role_name, role_description, role_category (e.g., writing, analysis, supervision), status (active or inactive)
- Contribution - researcher, publication, role_performed, contribution_notes, date_recorded, verification_status
- Topic - topic_name, topic_description, topic_category
- PublicationTopic - publication, topic, date_associated

- PrincipalInvestigators - name, email_address, institution, department, lab_name
- Administrators - name, email_address, system_role, account_status

Narratives of the System

- A contribution represents the association between one researcher and one publication.
- Each contribution must specify exactly one role performed by the researcher for that publication.
- A single researcher may have multiple contributions for the same publication if they performed multiple distinct roles.
- Each role must be selected from a predefined list of allowable contribution roles (e.g., Conceptualization, Data Curation, Writing, Methodology).
- The system must maintain referential integrity such that no contribution can exist without a valid researcher, publication, and role.
- If a researcher or publication is removed from the system, associated contributions must either be restricted or removed according to defined integrity constraints.
  The system must store sufficient metadata to uniquely identify a publication (e.g., title, year, optional DOI).
- The system must store sufficient metadata to uniquely identify a researcher (e.g., name, email, optional ORCID).
- The system must support analytical queries that summarize counts of contributions grouped by researcher, role, or publication.

Challenge Questions

1. Should a researcher be uniquely identified by email, ORCID, or a system-generated identifier? What happens if email changes?
2. Are external collaborators (outside the lab or institution) stored as full researchers, or should they be marked differently?
3. Should the list of roles be strictly controlled by administrators, or can new roles be created dynamically?
4. Should contribution records require verification or approval by a PI before becoming official?
5. If a publication has an official author order, should that ordering be stored in addition to structured roles?
6. Can a researcher claim a contribution, or must contributions be assigned by an administrator?
7. Should historical changes to contributions be tracked (audit log), or is only the current state required?
8. Are topics manually entered tags, or imported from an external metadata source?