arXiv
MAB/SAB Annual Meeting
State of arXiv

Oya Y. Rieger
arXiv Program Director

October 2018

arXiv.org

arXiv as an archive
≈ arXiv by the numbers ≈

- 1,443,000 million papers
- 600 new submissions/day
- 7 paper downloads/second
- 162 volunteer moderators
- 1 billion download+

Open access to 1,440,000 e-prints in Physics, Mathematics, Computer Science, Quantitative Biology, Quantitative Finance, Statistics, Electrical Engineering and Systems Science, and Economics

<table>
<thead>
<tr>
<th>Year</th>
<th>Submissions</th>
<th>Downloads*</th>
</tr>
</thead>
<tbody>
<tr>
<td>2012</td>
<td>84,000</td>
<td>64 M</td>
</tr>
<tr>
<td>2013</td>
<td>92,500</td>
<td>67 M</td>
</tr>
<tr>
<td>2014</td>
<td>97,000</td>
<td>90 M</td>
</tr>
<tr>
<td>2015</td>
<td>105,000</td>
<td>139 M</td>
</tr>
<tr>
<td>2016</td>
<td>113,380</td>
<td>139 M</td>
</tr>
<tr>
<td>2017</td>
<td>123,520</td>
<td>187 M</td>
</tr>
</tbody>
</table>

*The numbers are sensitive to robot downloads and it is hard to remove all from our numbers so potential significant over-counting – we put less effort in cleaning up this data 2014 on.*
arXiv submission rate statistics
data for 1991 through 2017, updated 31 December 2017

https://arxiv.org/help/stats/2017_by_area/index
business model & membership

Business Model, 2018-2022

- Cornell University
  - $170,000 per year in support of operational costs
  - in-kind contribution of indirect costs (37%)
- Simons Foundation
  - $100,000 per year
  - $300,000 per year matching grant
- Member Institution
  - annual fees within $1,000-4,400 range (based on usage ranking)
- Online fund raising
  - $50,000 +

Business Model FAQ: https://tinyurl.com/yb2yt8ee
2018 Member Projections

- **26 Countries + EU**
- **227 Members**
- **$504K Contributions**

**Countries by Contribution Percentage:**
- **US Consortia, 21%**
- **US Non-Consortia, 21%**
- **Germany, 13%**
- **Japan, 7%**
- **Netherlands, 4%**
- **Switzerland, 3%**
- **Sweden, 2%**
- **UK, 8%**
- **All Other Places, 4%**
- **Canada, 4%**
- **France, 3%**
- **Australia, 4%**

**Countries:**
- Austria
- Belgium
- China
- Denmark
- EU
- Finland
- Hungary
- India
- Ireland
- Israel
- Italy
- New Zealand
- Norway
- Russia
- South Africa
- Spain
- Taiwan

**2010 to 2018 Members Growth:**
- arXiv Members
- Contributions
- Members Growth
<table>
<thead>
<tr>
<th>Item</th>
<th>CY18</th>
<th>Midpoint (July)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>REVENUE</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Member contributions</td>
<td>$500,420</td>
<td>$500,420</td>
</tr>
<tr>
<td>Simmons Foundation Annual Commitment</td>
<td>$100,000</td>
<td>$100,000</td>
</tr>
<tr>
<td>Simmons Foundation Matching Fund</td>
<td>$300,000</td>
<td>$300,000</td>
</tr>
<tr>
<td>Cornell University Library (Digital + Leadership)</td>
<td>$170,000</td>
<td>$170,000</td>
</tr>
<tr>
<td>Sloan Foundation (non-March)</td>
<td>$146,956</td>
<td>$146,956</td>
</tr>
<tr>
<td>Nursing Student Foundation (March)</td>
<td>$107,109</td>
<td>$107,109</td>
</tr>
<tr>
<td>Funding from Development Reserve</td>
<td>$60,000</td>
<td>$150,000</td>
</tr>
<tr>
<td>Gifts</td>
<td>$50,000</td>
<td>$50,000</td>
</tr>
<tr>
<td><strong>TOTAL REVENUE</strong></td>
<td>$2,414,588</td>
<td>$2,414,588</td>
</tr>
<tr>
<td><strong>EXPENSES</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Personnel (including benefits)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Program Director, Scientific Director, HS Coordinator</td>
<td>1.2 FTE</td>
<td>$227,273</td>
</tr>
<tr>
<td>Operations Manager, User Support, Moderation</td>
<td>3.5 FTE + 0.6 FTE Students + Contract</td>
<td>$114,847</td>
</tr>
<tr>
<td>IT Lead, Lead Architects, Programming, Systems, UX</td>
<td>1.5 FTE + Contract</td>
<td>$146,512</td>
</tr>
<tr>
<td>Technology Strategy Advisor, Membership, Policy, Finance</td>
<td>0.4 FTE</td>
<td>$130,289</td>
</tr>
<tr>
<td><strong>Subtotal Personnel</strong></td>
<td>$529,032</td>
<td>$529,032</td>
</tr>
<tr>
<td>Non-Personnel</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Servers (physical &amp; virtual), hardware maintenance, storage and backup</td>
<td>$68,000</td>
<td>$83,000</td>
</tr>
<tr>
<td>Staff Computers, software, supplies, network, and misc</td>
<td>$6,050</td>
<td>$6,050</td>
</tr>
<tr>
<td>Meetings, workshops, conferences</td>
<td>$50,000</td>
<td>$54,000</td>
</tr>
<tr>
<td><strong>Subtotal Non-Personnel</strong></td>
<td>$164,000</td>
<td>$166,000</td>
</tr>
<tr>
<td><strong>TOTAL DIRECT EXPENSES</strong></td>
<td>$1,584,532</td>
<td>$1,522,373</td>
</tr>
<tr>
<td>Indirect and Volunteer Costs</td>
<td></td>
<td></td>
</tr>
<tr>
<td>College and department administration, staff support (16% of direct costs)</td>
<td>$320,360</td>
<td>$322,268</td>
</tr>
<tr>
<td>Facilities (10% of direct costs)</td>
<td>$133,430</td>
<td>$133,430</td>
</tr>
<tr>
<td>Sloan Foundation &amp; Hasing Simmons Foundation (15% of Foundation program support)</td>
<td>$93,250</td>
<td>$92,952</td>
</tr>
<tr>
<td>In-House moderation (16% modifications, varying time)</td>
<td>not tracked</td>
<td>not tracked</td>
</tr>
<tr>
<td><strong>Subtotal Indirect Costs</strong></td>
<td>$463,365</td>
<td>$478,160</td>
</tr>
<tr>
<td><strong>TOTAL EXPENSES (Direct + Indirect)</strong></td>
<td>$2,047,907</td>
<td>$2,000,263</td>
</tr>
<tr>
<td><strong>ANNUAL OPERATING RESERVES</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Operating Reserves</td>
<td>$300,000</td>
<td>$300,000</td>
</tr>
<tr>
<td>Development Reserves</td>
<td>$896,818</td>
<td>$855,898</td>
</tr>
</tbody>
</table>

12
<table>
<thead>
<tr>
<th>Year</th>
<th>Expenses</th>
<th>Revenue</th>
<th>Operating Reserves</th>
<th>Development Reserves</th>
</tr>
</thead>
<tbody>
<tr>
<td>2010</td>
<td>$312,000</td>
<td>$383,000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2011</td>
<td>$435,000</td>
<td>$470,000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2012</td>
<td>$509,000</td>
<td>$511,000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2013</td>
<td>$503,000</td>
<td>$770,000</td>
<td>$100,000</td>
<td>$277,000</td>
</tr>
<tr>
<td>2014</td>
<td>$643,000</td>
<td>$775,000</td>
<td>$150,000</td>
<td>$360,000</td>
</tr>
<tr>
<td>2015</td>
<td>$665,000</td>
<td>$815,500</td>
<td>$200,000</td>
<td>$456,300</td>
</tr>
<tr>
<td>2016</td>
<td>$767,600</td>
<td>$1,045,948</td>
<td>$250,000</td>
<td>$684,650</td>
</tr>
<tr>
<td>2017</td>
<td>$744,300</td>
<td>$1,016,400</td>
<td>$300,000</td>
<td>$906,900</td>
</tr>
<tr>
<td>2018 - projection</td>
<td>$1,423,400</td>
<td>$1,424,000*</td>
<td>$300,000</td>
<td>$856,000</td>
</tr>
<tr>
<td>2019 - projection</td>
<td>$1,600,000</td>
<td>$1,611,000*</td>
<td>$300,000</td>
<td>$726,000</td>
</tr>
</tbody>
</table>

*Income projection includes funds drawn from Development Reserves: $50,000 for 2018 and $130,000 for 2019.
organizational structure

**CY17 arXiv Organizational Model - Cornell University Library**

**EXECUTIVE TEAM**

- Oya Rieger, Program Director (0.5FTE)
- Steinn Sigurdsson, Scientific Director (0.5FTE)

**MANAGEMENT TEAM**

**IT DEVELOPMENT**

- Martin Lessmeister, IT Lead (1FTE)
- Erick Peirson, Lead Architect (1FTE)
- 4FTE arXiv developers

**OPERATIONS**

- Jim Entwood, Operations Manager (1FTE)
- 3.1FTE arXiv administrators & students

**USER ENGAGEMENT**

- Gail Steinhart, Program Associate & arXiv NG Coordinator (0.5FTE)
- Chloe McLaren, Membership Program Coordinator (0.2FTE)

**Additional Contributors:**
Paul Ginsparg, Matt Bierbaum, & ~160 moderators

Red indicates Cornell contributions or indirect not included in the budget.
2019 arXiv Organizational Model - Cornell University

EXECUTIVE TEAM

- Oya Rieger, Program Director
- Steinn Sigurdsson, Scientific Director

MANAGEMENT TEAM

IT DEVELOPMENT
- Martin Lessmeister, IT Lead
- Erick Peirson, Lead Architect
- arXiv developers
  4.5 FTE + 1 FTE DevOp (open line)

OPERATIONS
- Jim Entwistle, Operations Manager
- arXiv administrators & students
  3.1 FTE

COMMUNITY ENGAGEMENT & DEVELOPMENT
- tbd (0.5 FTE)

Additional Contributors:
Paul Ginsparg, Matt Bierbaum, & ~160 moderators

arXiv: Roles & Responsibilities

SCIENTIFIC ADVISORY BOARD:
- Provides advice and guidance for the intellectual oversight of arXiv, pertaining to arXiv moderation
- Proposes & reviews proposals for new subject domains

MEMBER ADVISORY BOARD:
- Represents members’ interests
- Advises CUL on development, business planning, outreach and advocacy.

CORNELL ADMINISTRATION:
- Assumes overall responsibility for arXiv’s obligations.
- Provides institutional support and resources for arXiv (HR, business services, legal, etc.).
- Final arbiter for arXiv decisions.
arXiv
vis-à-vis
scientific communication
64% of total "author owner" data for Jan-May 2018
Open Access for Research Impact: 
OA Requirements in Horizon 2020

• An electronic copy of the publication must be deposited in a suitable green open access repository.
• The version of the paper will generally be the author's "post-print" or author's final version of the article after the refereeing process has taken place.
• The green open access repository can be a disciplinary repository (e.g. PubMed Central or arXiv) or an institutional repository.

http://libguides.ucd.ie/openaccess/H2020

Open Access and arXiv

But we have just learned that by far the most successful repository of open access papers in our subject, the arXiv, is to be disallowed. .. Apparently the reason they gives is that there is no mechanism for linking a paper on the arXiv with the published version of the paper.

In physics, for the last three decades, we have relied on the arXiv to serve all our needs relative to preprints. The arXiv offers a superb service to the community: it is the single, universal port of call used by professional physicists (and others) throughout the world. Its non-corporate foundations mean that its credibility is untainted and unquestioned, and its value-for-money as high as can be. The EC now wishes to have yet another piece of infrastructure reproducing those services. ... So the EC's strategy seems to be: instead of supporting the community-run solution, try to deprecate it.

https://jscaux.org/blog/post/2018/04/02/ectender/
State of arXiv: Progress

- Conclude stewardship discussion → move to CIS
- Operational:
  - Integrated approach through Classic Renewal with full-time leads
  - Continue providing a 24/7 reliable service and coordinate the processing of 600 papers/day and 7 paper downloads/second
  - Stronger communication through improved arXiv Public Wiki
- Fund raising & partnership:
  - Completed Sloan Foundation ($450K), started Heising-Simons ($322K)
  - arXiv-Society partnerships pilot
- arXiv Labs pilot
Sequential Short-Text Classification with Recurrent and Convolutional Neural Networks

Ji Young Lee, Franck Dernoncourt

(Submitted on 12 Mar 2016)

Recent approaches based on artificial neural networks (ANNs) have shown promising results for short-text classification. However, many short texts occur in sequences (e.g., sentences in a document or utterances in a dialog), and most existing ANN-based systems do not leverage the preceding short texts when classifying a subsequent one. In this work, we present a model based on recurrent neural networks and convolutional neural networks that incorporates the preceding short texts. Our model achieves state-of-the-art results on three different datasets for dialog act prediction.

Comments: Accepted as a conference paper at NAACL 2016
Subjects: Computation and Language (cs.CL); Artificial Intelligence (cs.AI); Machine Learning (cs.LG); Neural and Evolutionary Computing (cs.NE); Machine Learning (stat.ML)
Cite as: arXiv:1603.03827 [cs.CL]
(or arXiv:1603.03827v1 [cs.CL] for this version)

Bibliographic data
[Enable Bibex (What is Bibex?)]

Submission history
State of arXiv: Work Ahead

- Infrastructure renewal and service & UX improvement
  - Paying off tech debt
  - Sustainable R&D (arXiv Labs)
  - Dark archive for arXiv
- Assess sustainability of volunteer moderator network
- Review governance documents & policies
  - arXiv principles → roles of arXiv team, Greg M, Paul G, MAB, SAB
  - Closing communication loops
- Expand capacity for fundraising, grant writing
- Networking and collaborations
  - Monitor relevant open science policies and practices
  - Make more time for assessing and building partnership
For additional information please see arXiv Public Wiki: https://confluence.cornell.edu/display/arxivpub/
2018 arXiv Roadmap

The arXiv roadmap is a living document and communication tool to accommodate continuous prioritization throughout the year. Items are listed in approximate priority order, subject to change based upon consideration of input from arXiv stakeholders, assessment of new opportunities and initiatives as they arise, and progress on next generation arXiv development.

Beginning with the roadmap (2018) we are treating arXiv-NG and “classic” arXiv development, business planning and governance as a single, unified effort. For technical development, some parts of arXiv will be rolled out, while others will be transitioned in stages (phasing “online”) to new infrastructure.

Much of the work planned for 2018 is essential infrastructure that is required in order to rebuild arXiv. Many tasks involve dependencies and cannot be shown/done if the overall effort is to move forward.

Related documents: arXiv software releases | arXiv development blog posts

Technical

Switch over to new Database Infrastructure: This is a system operations priority.

Status: Completed January 2018

Author Notification of Reclassification: Add new features to provide authors with notification about reclasification of their paper.

Status: Initial specification complete; policy questions reviewed. Will be integrated into submission development.

Auto-endorsement: Shift the auto-endorsement rules to work at a single whitelist of recognized email domains. Expand the list of email domains that qualify for auto-endorsement. Develop an admin interface to update the auto-endorsement list.

Status: Veto list complete. Defined for integration into development of user management system/infrastructure.

Infrastructure: New infrastructure setup and configuration to support deployment of arXiv-NG services in the cloud.

arXiv.org blog:
https://blogs.cornell.edu/arxiv/2018/05/
news from arXiv.org

Recent Posts

• arXiv.org Volunteer Moderator Position Description August 10, 2018
• arXiv NG Phase I: Sloan Grant Wrap-up August 2, 2018
• A new category for arXiv July 24, 2018
• Two New Categories in Economics July 23, 2018
• arXiv-NG: In-Person Testing for Submission UI July 20, 2018
• Search v0.4: bug-fixes, date-related searches July 18, 2018
• arXiv NG: incremental decoupling and search June 13, 2018
• arXiv hits 12k in May May 31, 2018
Executive Session Questions for SAB & MAB Members

• What are the areas for improvement?
• How should the Cornell team strengthen the operation from technical, policy, user support, fundraising, and communication perspectives?
• Has Cornell set the right expectations in regard to your roles as advisors?
• What are the other ways MAB/SAB could be involved in advising the Cornell team?
• Any other input/suggestions you may want to relay to us

Online Survey: SAB/MAB 2018 Meeting Survey