

CBRC major projects 2016

The following is a bullet point summary of the major areas of activity for CBRC during 2016.

- Imago, community-based digital collections repository
 - A **major** collaborative effort between UITS Research Technologies, the IU Libraries, and the CBRC
 - <http://imago.indiana.edu/catalog>
 - Repository now has greater than 70,000 digital collection objects from the IU Herbarium, very soon to have an additional 20,000 from the IU Paleo Collection
 - Features include multiple metadata schema integrations, 3D object viewer, ultra-high resolution scalable image viewer, and more
- *Notes From Nature*
 - Online web portal for accessing museum collections and crowd-sourced label transcription at <https://www.notesfromnature.org/>
 - This citizen-science portal provides a sleek interface for allowing online volunteers to help put handwritten information from collection labels into structured databases
 - NFN volunteers rapidly transcribed our first (of many, hopefully!) project of 1500 labels (in triplicate) in 60 days with a high degree of accuracy
- *WeDigBio* (Worldwide Engagement using Digitized Biocollections)
 - Coordinated an international event hosted on the IUB campus and video-conferenced with hundreds of sites worldwide
 - An international event that culminates in a 4 day long transcript-a-thon where volunteers gather in physical gathering spaces and in virtual meeting rooms for engaging with digitized biocollections
 - ~180 people attended our event here in Bloomington
- Artificial Intelligence and Machine Learning - Handwritten Text Recognition for Biodiversity Informatics
 - A graduate student from the School of Informatics and Computing's Data Science program has been working with us to implement machine learning and artificial intelligence to harness high performance computing for handwritten text recognition
 - We're using the human-transcribed labels from our *Notes From Nature* platform to use as training material for the algorithms by which we aim to complete 20,000 pages of IUPC catalog transcription
 - Long range goal will be to use photographs of specimen labels to have HTR algorithms extract useful data handwritten on historic labels
 - We received a grant of \$20k from Microsoft for cloud-computing time on their Azure system for implementing the machine learning aspect of this project.
- Collaborative projects with the Indiana Geological Survey, including:

- Coordination and integration of two databases, the Indiana University Paleontology Collection (fossil database) and the Indiana Geological Names Information System (authoritative rock-unit names database)
- IGS CalendAR – augmented reality extension of their popular calendar
- Augmented Reality/Virtual Reality web-app development with UITS Advanced Visualization Laboratory
 - The CBRC is pursuing a number of AR/VR apps for enhancing education/outreach in digital biodiversity informatics
 - Projects include:
 - a virtual reconstruction of the Paleozoic reefs of Indiana as an immersive virtual reality experience
 - an Augmented Reality extension to the joint project with the Indiana Geological Survey on the Fossils of Indiana (poster and book)
 - an Augmented Reality extension to the widely distributed Indiana Geological Survey CalendAR highlighting Fossils of Indiana
- Collaboration with IUPUI Informatics class N420 (digital design and client interaction seminar)
 - I'm working with faculty member Zebulun Wood, one graduate student, and a team of undergraduate students to work with the IU Paleontology Collection as a "client" to take 3D scan data from our collection and to turn it into a Virtual Reality/Augmented Reality app for research, education, and outreach purposes
- Photogrammetry (objects, small objects, landscapes) on Karst supercomputer
 - Collaboration with UITS RT, Cyberinfrastructure for Digital Humanities, and IU Advanced Visualization Laboratory
- Peebles Memorial lecture (cyberinfrastructure and big data at IU)
 - Keynote given by Gary Motz
- UITS Public Relations is doing a video feature of Motz and CBRC research & digitization
 - Video highlight will be posted on the IU YouTube channel in mid-March
- Grants Awarded
 - Fall 2016 – Institute of Museum and Library Services
 - \$112,505
 - ACCESSioning at Indiana University: Promoting Digital Access and Re-Discovery of the IU Paleontology Collection
 - Fall 2016 – iDigBio
 - \$2,500
 - Georeferencing for Research Use, A Short Course (hosted at the National Center for Ecological Analysis and Synthesis, Santa Barbara, CA)
 - Spring 2017 – Microsoft (Azure for Research RFP)
 - \$20,000

- Machine Learning & Data Science: Handwritten Text Recognition for Biodiversity Informatics
- Grant Proposals Submitted
 - Spring 2017 – IBM Systems Research
 - Grant-in-kind (amount unspecified)
 - Handwritten Text Recognition for Biodiversity Informatics
 - Fall 2016 – National Science Foundation: Advancing Digitization of BioCollections
 - \$149,387
 - Digitization Partner to an Existing Network: Paleoniches on the Western Cincinnati Arch, the Ordovician of Indiana
 - Fall 2016 – National Science Foundation: Advances in Biological Infrastructure [Declined]
 - \$913,180
 - Advances in Biological Infrastructure Innovation: Community-Based Digital Repository Innovation for Biodiversity Big Data
- Data on collection usage in 2016:
 - IU Paleontology Collection
 - 102 visitors
 - 15 loans of collection material
 - 3/129 classes/students using collection
 - William R. Adams Zooarchaeology Laboratory
 - 91 visitors
 - 112 loans of collection material
 - 4/420 courses/students using collection