BENJAMIN AHLBRAND
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Education
1994 - 2005 Burris Laboratory School
2004 - 2005 Indiana Academy for Science, Mathematics and Humanities
Fall 2011 - Spring 2013 Ivy Tech (3.7) - Computer Information Systems / Liberal Arts
Fall 2013 - Fall 2016 Purdue University, Bachelor's of Science - Computer Science (3.0)
Track Specialization in Computer Graphics & Visualization

Publications:
Conference:
- TopoGroups: Context-Preserving Visual Illustration of Multi-Scale Spatial Aggregates - ***ACM CHI 2017 (accepted)*** Zhang. J., Malik, A., **Ahlbrand,** B., Elmqvist, N., Maciejewski, R., Ebert, D.
- A Visual Analytics Framework for Microblog Data Analysis at Multiple Scales of Aggregation - ***EuroVis 2016*** *Computer Graphics Forum*, Zhang. J., **Ahlbrand, B.,** Malik, A., Chae, J., Min, Z., Ko, S., Ebert, D. **acceptance rate: 27%, impact factor: 1.642**

VAST Challenge 2015 Workshop:
- Chae, J., Wang, G., **Ahlbrand, B.**, Gorantla, M.B., Zhang, J., Chen, S., Xu, H., Zhao, J., Hatton, W., Malik, A. and Ko, S., 2015, October. Visual analytics of heterogeneous data for criminal event analysis VAST challenge 2015: Grand challenge. In *Visual Analytics Science and Technology (VAST), 2015 IEEE Conference on* (pp. 149-150). IEEE.
- Hatton, W., Zhao, J., Gorantla, M.B., Chae, J., **Ahlbrand, B.**, Xu, H., Chen, S., Wang, G., Zhang, J., Malik, A. and Ko, S., 2015, October. Visual analytics for detecting communication patterns. In *Visual Analytics Science and Technology (VAST), 2015 IEEE Conference on* (pp. 137-138). IEEE.
- Zhao, J., Wang, G., Chae, J., Xu, H., Chen, S., Hatton, W., Towers, S., Gorantla, M.B., **Ahlbrand, B.**, Zhang, J. and Malik, A., 2015, October. ParkAnalyzer: Characterizing the movement patterns of visitors VAST 2015 Mini-Challenge 1. In *Visual Analytics Science and Technology (VAST), 2015 IEEE Conference on* (pp. 179-180). IEEE.

Awards:
- Received an Honorable Mention for our paper and accompanying visualization system submitted for the VAST Challenge 2015 - Mini Challenge 2
- Team came in 3rd place for a 'process gladiator' competition in a systems programming course
- SMART (Social Media Analytics and Reporting Toolkit) development team received a Certificate of Merit awarded by the U.S. Coast Guard for the system's contributions to public service
- Dean's List Fall 2011 through Fall 2012 semesters at Ivy Tech
- Semester Honors for Spring 2016 at Purdue
- REU grant Summer 2016 for independent research
- Travel Award AccessIT - EuroVis 2016

Research Experience:
Independent research towards Many Lights for Dynamic Scenes *(advisor: Voicu Popescu)*   **04/16 - current**
- Ongoing project: constant time visibility determination for dynamic scenes with many lights at interactive rates (OpenGL, GLSL, C++)

Research Assistant for Purdue Visual Analytics Lab (VACCINE) *(advisor: David Ebert)*   **12/14 - current**
- Ongoing Project: visual analytics of spatial clustering at multiple scales
- Ongoing Project: visual analytics of user behavior logs.
- Exploring Spatiotemporal Microblogs at Multiple Levels of Aggregation: (Javascript, AngularJS, D3.js, Bootstrap, Openlayers, Python, Solr)
    - Back-end: twitter classification, multiple user session management, keyword expansion of synonyms, topic modelling, keyword extraction, keyword semantic similarity, spatiotemporal search term filter
    - Front-end: timeline view, summarization function, topic lens histograms
    - The second author of paper (Eurovis, Computer Graphics Forum) based on this work.
    Core member and co-author for VAST Challenge 2015

- Led the the back end server development team. Utilized Apache Solr for fast indexing and retrieving large-scale trajectory and network data. Established a python-based data server that allows the client to query Solr system using Restful API

SMART: Social Media Analytics and Reporting Toolkit: (Javascript, PHP, Java)
- Implemented a real-time geospatial filtering component based on the user-specified shapefiles.
- Integrated a few NLP libraries into the system, including Named Entity Recognition, Part of Speech tagging, Sentiment Analysis.
- Integrated Bing translation API in the system for multiple language detection and translation.

Summer Research for Oracle *(advisor: Jan Vitek)*   **05/14 - 08/14**
- Oracle's 'FastR' Java implementation of GNU-R, aimed for use with built-in statistical analytics in their products, leveraging advantages of Graal/Truffle and HotSpot for performance improvements
- Worked on R primitive functionality, such as sorting, vector/matrix functionality interfaced with BLAS utilizing software engineering principles to produce an easily maintainable codebase

Professional Experience:

Project Coordinator/ Teaching Assistant for Software Engineering (cs307)   **08/15 - current**
- Advising teams of 4 to 6 students throughout semester long open ended projects and learning Android, Unity, audio programming, web programming / databases (Ruby on Rails, NodeJS, PHP/Laravel, MySQL, MongoDB), interactive applications of hand gestures with LeapMotion, using APIs and design patterns w/Agile principles
- evaluating student project development / planning documentation
- managing student peer feedback system for ~250 students in cs307 and cs408 (Software Testing)

Developer at Purdue Cognition & Learning Lab   **06/15 - 04/16**
- working on a long term project towards a 'smart' digital tutor with automated relevance scoring of written responses using QuickScore (developed by collaborators at Indiana University) and adaptive lag adjustment according to user performance, users can upload their own materials, developed new version with a MEAN (MongoDB, Express, Angular, NodeJS) stack, previously built with Play Framework in Java and MySQL
- automated deployment of web experiments using PHP, MySQL, Javascript (AngularJS / D3js) to allow researchers to use a configuration file to dynamically create highly customized recall/retrieval tasks to collect data through Amazon MTurk without the need for programming experience, later built a MEAN stack to replace the PHP based framework

Independent Contractor   **06/10 - 03/14**
- MSP contracting with libraries, banks, small businesses, small industrial plants (up to ~200 users)
- web development (PHP/SQL/JavaScript) , web hosting, graphic design, advertising
- server administration, SAMBA, Active Directory, network equipment deployment / maintenance (switches, routers, firewalls, cabling), disk forensics, diagnostics/repairs, task automation
- security auditing / WiFi penetration testing, VPN setup

Managed Services Provider subcontractor through Benton Technology, Inc.   **01/08 - 02/11**
- Custom PC construction / consultation, OS setup, configuration, imaging, and deployment of workstations and networking equipment, refurbishing
- Data destruction for sensitive materials, disaster recovery
- Trained users in best practices, office software, equipment

Managed Services Provider subcontractor through The Adeo Group LLC   **05/05 - 02/11**
- On call and remote support for nonprofit organizations in downtown Indianapolis, South Bend
- Custom PC construction / consultation, OS setup, configuration, imaging, and deployment of workstations and networking equipment

Research Interests

visual analytics, virtual/augmented reality, rendering, procedural generation, machine learning, data mining, human computer interaction, natural language processing, computer music, cognitive science

Organizations

- Phi Theta Kappa Honor Society, ACM, IEEE

Preferred Languages: C++, Python, Java, C, JavaScript
Skills: git, Linux/Unix, MySQL, OpenGL, NodeJS, MongoDB, Adobe CS, Unreal Engine / Unity3D, PHP
Hobbies: Guitar, music composition, video games (playing and development), creative writing, A/V editing