



# The MMS Scope

## Minnesota Microscopy Society

Local affiliate of the **Microscopy Society of America**  
and the **Microanalysis Society**

february 2017

### In this Issue:

#### MinnTS:

Participate in the 15th annual Minnesota Technical Symposium, happening this year at Ecolab's Innovation Center.

#### Up ahead:

Spring Symposium on May 5. Five speakers scheduled. Mark your calendar today.

#### 2017 MMS dues:

Please remember to submit your annual membership dues.

#### Thank you, volunteers!

A big thank you to all who gave their time to a winter full of exciting microscopy demos! See pages 5-11 for a summary and pictures.



# 15th Annual MinnTS

(Minnesota Technical Symposium)

[www.minnts.org](http://www.minnts.org)

**Thursday, March 16**

**VIRTUAL REALITY / AUGMENTED REALITY**



#### Haley Borck

AI Research Scientist,  
Adventium Labs



#### Mike Nowak

CIO, Utilimarc



### SCHEDULE on MAR 16

- |                |   |
|----------------|---|
| 4:00 p.m.      | Innovation Center tour 1  |
| 5:00 p.m.      | Innovation Center tour 2  |
| 5:00-6:00 p.m. | Registration, social with refreshments                                      |
| 6:00-7:00 p.m. | Dinner  |
| 7:00-7:15 p.m. | Welcome message, introductions (Gary Korba)                                 |
| 7:15-8:00 p.m. | Haley Borck – <i>MonitAR: Intelligence Guidance Using Augmented Reality</i> |
| 8:00-8:15 a.m. | Break   |
| 8:15-9:00 p.m. | Mike Nowak – <i>The Rise of Virtual Reality</i>                             |



### LOCATION

Ecolab Innovation Center  
Schuman Campus  
Eagan, MN

[map it](#)



655 Lone Oak Drive, Eagan, 55121



### RESERVATIONS

**Cost:** \$30

**Deadline:** Tuesday, Mar. 8, 11:59pm

Reservations may be made via PayPal by going to the MinnTS website at [www.MinnTS.org](http://www.MinnTS.org). Use the [MMS reservation link](#).

*No refunds for cancellations after March 8.*

## MinnTS | 15th Annual Meeting

continued



### SPEAKER BIOS

**Hayley Borck** is a Research Scientist in the areas of case-based reasoning and policy/behavior recognition in multi-agent systems. Most recently, her research has been in the domain of Beyond Visual Range Combat as part of research project to create a unmanned wingman cognition system. [[Published papers.](#)]

Prior to joining Adventium Labs, Hayley was a research scientist at Knexus Research. There she researched approaches for 3D object placement including developing an abstract genetic algorithm library in C++ used to solve object placement planning. Additionally, she helped create a simulation engine and user interface for demonstrating and evaluating hierarchical task network (HTN) planning and root cause analysis performances on mine countermeasure missions. Haley holds a B.S. degree in Computer Science from Eckerd College and an M.S. also in C-Sci from the Georgia Institute of Technology.



Borck

**Mike Nowak** is Chief Information Officer at BI and fleet consulting/benchmarking firm Utilimarc. Prior to Utilimarc, Mike was a partner at Vektor Software, an IT consultant at Sun Country Airlines and a business analyst with Jack Henry & Associates. Mike's specialties include vehicle telematics, BI, enterprise software development, IT strategy and product development. Mike began his career at the University of St. Thomas with a bachelor's degree in marketing management, He holds a master's in quantitative methods and computer science, also from UST.



Nowak



### ABSTRACTS

**Borck:** MonitAR is a novel application of Case-based Reasoning (CBR) that combines intelligent tutoring using Augmented Reality (AR) and prediction. The MonitAR system is intended for use as an intelligent guidance system for astronauts conducting complex procedures during periods of a communication time delay or blackout from Earth. The approach takes advantage of the relational nature of time-series data to detect a task that the user is completing and diagnose the issue when the user is about to make a mistake.

**Nowak:** The Virtual and Augmented Reality market reached more than \$5 billion last year and is rapidly expanding. With an estimated growth rate of more than 180% and solid adoption, it is becoming the next computing platform. This presentation will cover the current VR and AR ecosystem including hardware, inputs, distribution platforms and the latest content. The VR and AR ecosystem will transform education, gaming, architecture, engineering and many other disciplines. These disciplines will experience large shifts in how we create, distribute and consume information. We currently experience digital content through a two dimensional window. The Virtual and Augmented Reality gives us a fully immersive way of interacting with digital content.

## MinnTS Poster

# 15th Annual Minnesota Technical Symposium

[www.MinnTS.org](http://www.MinnTS.org)



Join us **Thursday, March 16<sup>th</sup>** for tour, networking, dinner & 2 outstanding talks:

## ***MoniAR: Intelligent Guidance using Augmented Reality***



### Hayley Borck, Adventium Labs

MoniAR is a novel application of Case-based Reasoning (CBR) that combines intelligent tutoring using Augmented Reality (AR) and prediction. The MoniAR system is intended for use as an intelligent guidance system for astronauts conducting complex procedures during periods of a communication time delay or blackout from Earth. The approach takes advantage of the relational nature of time-series data to detect a task that the user is completing and diagnose the issue when the user is about to make a mistake.

## ***The Rise of Virtual Reality***

### Mike Nowak, CIO, Utilimarc

The Virtual and Augmented Reality market reached over 5 Billion dollars last year and it's rapidly expanding. With the estimated growth rate of over 180% and solid adoption it is becoming the next computing platform. Mike Nowak will discuss the current VR and AR ecosystem including hardware, inputs, distribution platforms and the latest content. The VR and AR ecosystem will transform education, gaming, architecture, engineering and many other disciplines. These disciplines will experience large shifts in how we create, distribute and consume information.

The Virtual and Augmented Reality gives us a fully immersive way of interacting with digital content.



**Tours leave at 4pm & 5pm sharp – limited availability at both times - be early!**

**DATE:** Thursday, March 16, 2017 **Tours:** 4-6p, **Social:** 5-6p **Dinner/Talks** 6-9p

**LOCATION:** Ecolab - Schuman Research Facility  
655 Lone Oak Drive, Eagan, MN 55121

**COST:** \$30

**RESERVATIONS OPEN:** Feb 20th - March 8, 2017 **website:** [www.MinnTS.org](http://www.MinnTS.org)

No refunds for reservations cancelled after Wednesday, March 8, 2017



## CALENDAR of EVENTS

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**5 MAY 2017**

**MMS Spring Symposium**  
Minnesota Science Museum  
120 W. Kellogg Blvd.  
St. Paul, Minn.



Speakers:

- ❖ **Sara Miller, Duke University**  
*Emerging Diseases and Microscopy*
- ❖ **Robert Simmons, Georgia State University**  
*Fungi in the Human Environment*
- ❖ **Tony Erickson & Scott Burnett, Ecolab**  
*Biofilms in the Food and Beverage Industry*
- ❖ **Lucille Giannuzzi, L.A. Giannuzzi & Associates, LLC**
- ❖ **Xuejun (Jun) Wang, Ecolab**  
*Visualization and Quantification of Biofilm Inhibition and Removal using Confocal Laser Scanning Microscopy*



## DON'T FORGET!

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Please remember to pay your 2017 MMS membership dues.





THANK YOU



## Thank you, Project MICRO Volunteers!

Project MICRO

*Project MICRO has been unusually busy this winter. Thank you to all the devoted and new volunteers who gave their time, energy and enthusiasm to help inspire the next generation of microscopists!*

On **Thursday, January 26, 2017**, **Steve Axdal, Muriel Gavin, Jeff Payne**, and **Patti Sanft** volunteered to present microscopy demonstrations at EXPO Elementary School's STEM Night in Saint Paul from 5:00 to 7:30 p.m. Seventy-five happy visitors were served microscope science. Thank you for giving your time and inspiration to these young scientists!

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MMS partnered with **Z Puppets Rosenschnoz** theater group for an art and science public extravaganza. Z Puppets performed their new production of **Cellula**, a glow-in-the-dark puppet show about mitosis cell division, at the In The Heart of The Beast Puppet and Mask Theatre in Minneapolis with MMS presenting microscopy demonstrations before and after each performance to an enthralled audience.

MMS helped with all eight performances, some of which were sold out with extra chairs, during the weekends of **January 27-29** and **February 3-5**. More than 500 visitors tried our microscopy demonstrations set in the theater lobby and behind the audience seats. We presented Fingerprints, Sand, Fabrics, Everyday Cool Stuff, and Pond Life.

Thank you to all the MMS Volunteers who participated: **Gib Ahlstrand, David and James and Kathy Burleson, Gail Celio, Tom Fielitz, Muriel Gavin, Alyssa McKenna, Eric Morrison, Ann Palmer, Jeff Payne, Lee Penn, Mark Sanders** and **Patti Sanft**. Mark Sanders and Jeff Payne also participated in a KMSP-TV FOX 9 News interview to help promote these performances and microscopy. And, we were listed in the *Cellula* program on page 6, under the heading of Microscope and Bio Art Gallery Champions: Jeff Payne and the Minnesota Microscopy Society; Mark Sanders and the University of Minnesota Imaging Centers.

A special thank you to **Jeff Payne** for bringing all our equipment and participating in all eight performances. Another special thank you to **Mark Sanders** for demonstrating a microscope from the U of M Imaging Center, providing a wall video projection showing cell division, and for taking photos of this event.

THANK  
YOU!



## PROJECT MICRO PHOTO ALBUM



In the Heart of the Beast Puppet and Mask Theatre marquee featuring *Cellula*..



**Muriel Gavin** (front) showing visitors fabrics. **Mark Sanders** (back) demonstrating his microscope.



## PROJECT MICRO PHOTO ALBUM - 2



Many happy visitors packed in to see our demonstrations.



**Jeff Payne** showing visitors our Leica stereoscope and **Gib Ahlstrand** showing pond water life with the Dino-lite handheld stereoscope.





## PROJECT MICRO PHOTO ALBUM - 3



Libby Turner and Mankwe Ndosi, Z Puppets a capella singers, performing in front and encouraging the audience to sing with them.



FOX 9 TV News interviewing Z Puppets, promoting *Cellula*. On stage wearing black are Shari Aronson and Chris Griffith, *Cellula* creators and puppetry performers.

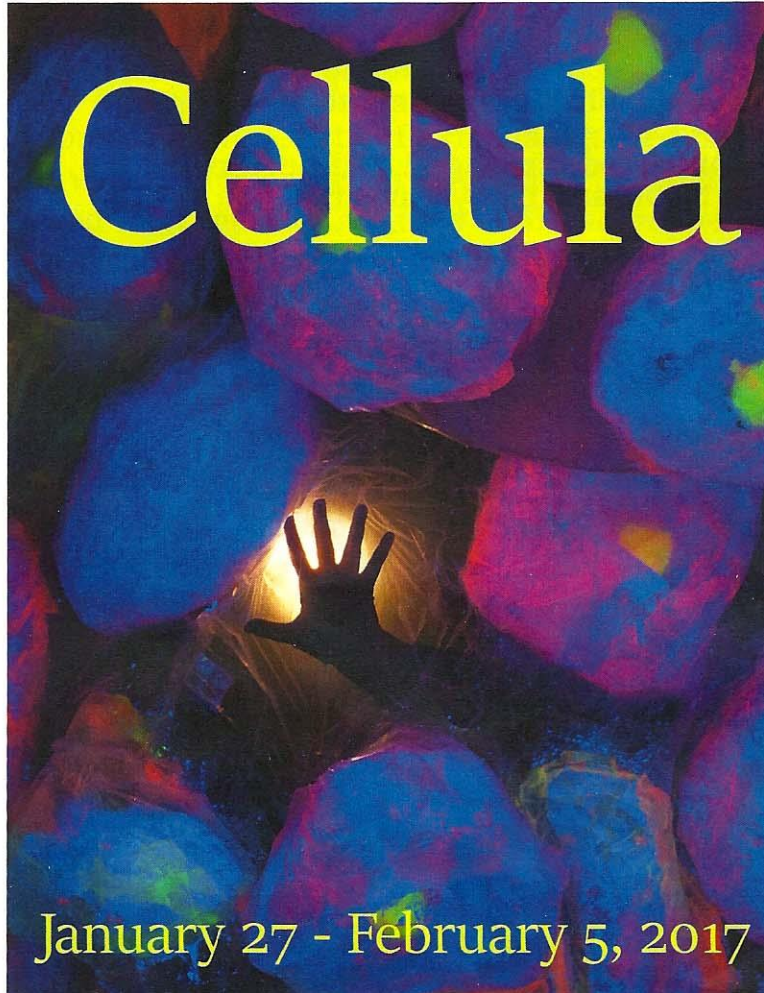




PROJECT MICRO PHOTO ALBUM - 4



Z Puppets Rosenschnoz *and*  
In the Heart of the Beast Puppet & Mask Theatre  
*present*



*Photo by Bruce Silcox*

With support from:



Shari Aronson is a Fiscal Year 2016 recipient of an Artist Initiative grant from the Minnesota State Arts Board. This activity is made possible by the voters of Minnesota through a grant from the Minnesota State Arts Board, thanks to a legislative appropriation by the Minnesota State Legislature; and by a grant from the National Endowment for the Arts.

Cellula program front cover.



## PROJECT MICRO PHOTO ALBUM - 5

**Cellula**

Written by Shari Aronson

Developed in collaboration with  
Chris Griffith, Kurt Hunter, Mankwe Ndosu,  
Libby Turner

Puppetry designed and built by  
Shari Aronson, Chris Griffith and Kurt Hunter;  
performed by Shari Aronson and Chris Griffith

Music composed, arranged and performed by  
Mankwe Ndosu and Libby Turner

*Featuring Florence Aronson as herself*

*Cellula* is inspired by my family lineage of scientists – especially my Ma, who always encourages me to ask and imagine.

– Shari Aronson

**About Z Puppets Rosenschnoz**

Our mission is to lead children and their adults to feats of imagination through the power of playfulness through:

- Arts and Mindfulness
- Arts for all Abilities
- Science Technology, Engineering and Math of Puppetry

Z Puppets tours nationally, and has appeared locally at the International Children's Festival at the Ordway, Children's Theatre Company, Walker Arts Center, Minneapolis Institute of Arts and MN State Fair. Creative Directors **Shari Aronson** and **Chris Griffith** co-founded Z Puppets in 1998. Together They have created over 25 original productions for family audiences– from a glow-in-the dark ping pong ball circus to the world's only puppet, rock, yoga adventure for families on the Quest for Calm.

To follow the ongoing adventures of Z Puppets, visit  
[www.zpuppets.org](http://www.zpuppets.org)



*Cellula* program p1, performance/theater credits.



## PROJECT MICRO PHOTO ALBUM - 6



**THANK YOU** for making *Cellula* come true:

**In the Heart of the Beast Puppet & Mask Theatre:**

Alison Heimstead, Steve Ackerman, Stephanie Rogers, Angie Courchaine, Corrie Zoll

**MRAC Advisors:** Diane Aldis, Adele Binning, Malia Burkhart, Megan Flod-Johnson, Jessica Huang, Masanari Kawahara, Cheryl Kessler, Jayson King, Karen Kingsley, Chris Lutter-Gardella, Dayna Martinez, Rebeka and Elijah Ndosu, Nicola Pine and Felix Svatek-Pine, Katie Wiley and Addie Winesett

**Microscope and Bio Art Gallery Champions:**

Jeff Payne and Minnesota Microscopy Society  
 Mark Sanders and University of Minnesota Imaging Centers  
 Bethany Drehman and Federation of American Societies for Experimental Biology  
 Wini Froelich and Mill City Museum  
 Krista Pearson and Mia (Minneapolis Institute of Arts)



**Youth interview sites:** Minneapolis Boys and Girls Club, Urban Arts Academy, Pillsbury House

**Loyal 1st responders:** Zora and Raquel Bael-Cyr; Andrea Cyr, Margo McCreary, Susan Patterson, Nadja Reubenova, Paul Robinson, Nora Strande, Laurie Witzkowski

**In the Heart of the Beast 2015 PuppetLab soulmates:**  
 엄정애, Lelis Brito, George Meyer and Davey T. Steinman

**Heart and Soul:** Florence and John Aronson

*Cellula* program p6, performance appreciation.





## MMS CORPORATE SPONSORS

Corporate Sponsors are the backbone of financial support for the Society. These members make it possible for the Society to support Project Micro and to cover many expenses of the regular meetings and the Spring Symposium. MMS gratefully acknowledges the corporate sponsorships provided by the following companies in 2016-2017. To become a Corporate Sponsor, complete and return the MMS membership form at the end of the newsletter.

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## MMS SUSTAINING & PATRON MEMBERS

The Minnesota Microscopy Society would like to express sincere thanks to our Sustaining and Patron Members. These members provide financial support to the organization above the standard membership fee. This additional support makes it possible for MMS to maintain its financial well being. To become a Patron or Sustaining Member, complete and return the MMS membership form at the end of the newsletter.

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**Newsletter Editor:** Maria Graff, Minneapolis, MN;  
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763-432-5630; [sue@lichenlabs.net](mailto:sue@lichenlabs.net)

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## MINNESOTA MICROSCOPY SOCIETY | MEMBERSHIP FORM

All microscopists are urged to support their Society at one of the membership levels offered below. Often, supervisors will support MMS memberships out of their project budget because they recognize that it is a very inexpensive way to maintain and increase the skills of their microscopists. If you have been a member over the years and recognize the value of MMS to the community of microscopists it serves, consider upgrading your membership this year to the Patron or Sustaining level. Thank you.

Name \_\_\_\_\_ Dr  Mr  Ms  Phone (\_\_\_\_) \_\_\_\_\_

Affiliation \_\_\_\_\_ Position \_\_\_\_\_

Address \_\_\_\_\_ ZIP \_\_\_\_\_

E-mail address \_\_\_\_\_

(Newsletter notifications will be e-mailed to the address above.)

Check here  if you do NOT want your name and address to appear in the Society directory.

Are you an MSA member?  MAS Member?

Student (\$5-\$9)  Basic (\$10-\$24)  Patron (\$25-\$99)  Sustaining ( $\geq$  \$100)

Payment: Check  PayPal  (Please make your payment via PayPal at

<http://www.mnmicroscopy.org/MMSMembership.html>.)

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