The University of Tennessee

Summer STEM Symposium

July 18, 2014

Ayres Hall, 4th Floor

A Showcase of Summer Research by Undergraduates, High School Students & Teachers in Science, Technology, Engineering and Mathematics at UT-Knoxville

Schedule

From 10:00-11:00 Odd-Numbered Posters Are Presented
From 11:00-12:00 Even-Numbered Posters Are Presented

CURENT Posters

1. Joe Foy (L&N STEM Academy). **Power application program assignments for two high school courses.**

2. Nick Wilsey (L&N STEM Academy). **Putting a spark in learning: Energy and power projects in the 9th-grade STEM classroom.**

3. Brian Hardinson (Pi Beta Phi Elementary). **A smarter power grid: technology and human behavior.**

4. Jill Lawrence (Gresham Middle School). **Connecting middle school content to the grid - magnetism and electricity.**

5. Nick Sirek (L&N STEM Academy). **GeoSpatial inquiry mapping project using ArcGIS to visualize potential natural disasters and their potential impacts on the nation's grid.**

6. Jessica Minton (Grandview Heights Middle School). **"Boxed up Circuits" and electromagnets lead to grid work.**

7. Abigail Chrystine Teron (Univ. del Turabo). **Model residents' response to the financial incentives in demand response program.**

8. Joey Larry Allen (Univ. of Tennessee). **Finding the hidden scenes behind Android applications.**

9. Lauren Atwell (Auburn Univ.). **Three phase induction motor dynamic modeling and behavior estimation.**

10. Jared Baxter (Univ. of Tennessee). **Renewable energy and power electronics demonstration.**

11. Doug Bouler (Univ. of Tennessee). **Amplifiers for wireless power transfer.**

44. Cynthia Chen (Chinese Univ. of Hong Kong), Samuel Loomis (North Carolina State Univ.). **Modeling multi-dimensional chemical transport with a parallel spectral element method.**

45. Mary Lauren Harris (Baylor Univ.), Catherine Eason (Wofford College). **Sequence assembly using the PoPLAR Science Gateway.**

TNSCORE Posters

46. Bradley Baker (King Univ.) **A novel approach to incorporate carbon nanotubes in carbon fiber.**

47. Autumn Douthitt (Tennessee Tech). **Fluorescently labeling PSI proteoliposomes by sortase-induced ligation to GFP.**

48. Matthew Jenkins (Maryville College). **Streamlining catalyst development through data-mining the materials genome.**

49. Michelle Lehmann (Pellissippi State Community College). **Optimizing photocataylst selection through computation of surface reaction mechanisms.**

50. Sarah Manning (Maryville College). **Poly(3-hexylthiophene) brushes as anode buffer layers in organic photovoltaic applications.**

51. Sam Medina (Univ. of Tennessee). **Electrochemical evaluation of novel binders based on biomass for alkaline fuel cell applications.**

52. Jordan Taylor (Austin Peay State Univ.) **Comparative chloroplast proteomes of green plants.**

53. Brooke Widner (King Univ.) **Designing the morphology of functional polymers.**

12. Forrest Chad Harley (Univ. of Tennessee). **FPGA state space simulation with peer-to-peer communication.**

13. Runsha Long (Univ. of Oklahoma). **Minimize total power loss in distribution network reconfiguration considering PEV charging strategy.**

14. Stanly Mathew (Rensselaer Polytechnic Institute), Hayden Dahmm (Swarthmore College). **An analysis of residential demand response design potential from consumer survey data.**

15. Mark Nakmali (Univ. of Oklahoma). **Thevinin equivalent estimation for voltage instability prediction.**

16. Anthony Perez (Univ. of Puerto Rico, Mayaguez). **Distributed photovoltaic generation emulation in converter based power grid emulation system.**

17. Philip Wolfe (Georgia Institute of Technology). **Non-intrusive load disaggregation using unmixing algorithms.**

18. Casey O'Leary (Washington State Univ.). **Dynamic ringtone adjustment using on demand sampling on Android smartphones.**

19. Stephen Tang (Univ. of North Carolina-Chapel Hill). **Method for FDR error detection with frequency based trigger.**

20. Morgan Briggs (Knoxville Catholic High School). **LabView computer program compatible with wireless implantable glucose monitoring sensor.**

21. Alex Chan (Farragut High School). **A system to test a single photon avalanche diode.**

22. Madelyn Fahhoum and Christina Cox (Knoxville Catholic High School). **Using electrostatic force cleaning to purify PMMA stained grapheme.**

23. Andrew Gonzalez (Bearden High School), Sean Lee (Farragut High School). **Sustainable transportation.**

24. Daniel Hong (Farragut High School). **Distributed storage in the transfer of geospatial data.**

25. Hyungdon Joo (Farragut High School), Melissa Yuan (Oak Ridge High School). **Stability analysis on wind-penetrated WECC system with composite load model.**

26. Shreyas Muralidharan (Farragut High School). **Improved demand response and load estimation through finer customer segmentation and neural network analysis.**

27. Aaron Sander (Farragut High School). **Detecting sleep apnea with the TIMSP430 microcontroller.**

28. Rachel Shah (L&N Stem Academy), Varsha Vuyyuru (Farragut High School). **Sensors on smartphone: tracking your location.**

29. Ronik Sheth and Raaghul Senthilkumar (Farragut High School). **The evaluation and development of an efficient cooling system for high performance computing applications.**

30. Alex Skwarczynski (Bearden High School). **Error detection in the Frequency Monitoring Network (FNET).**

31. Alissa White (L&N STEM Academy). **Sleep apnea monitoring using piezoelectric sensor and LabView programming.**

NIMBioS Posters

32. Megan Comer (Campbell County High School), Rebecca McDowell (West High School), Veronica Go (Univ. of Tennessee), John Shamshoian (California Polytechnic State Univ.). **Heart of the matter: predicting cardiac rhythm disorders using statistical techniques.**

33. John Marken (College of William and Mary), Nicole Rooks (Univ. of Tennessee, Chattanooga), Brian Whyte (SUNY Plattsburgh). **Could diminishing aggression in the Argentine ants lead to supercolony collapse?**

34. Marina Massaro (SUNY Geneseo), Kelly Moran (Clemson Univ.), Benjamin Roberson (Univ. of Tennessee). **Mixed smiles: An analysis of the coherence between experimental and behavioral response following ambiguous emotional stimuli.**

35. Brittany Boribong (Univ. of Scranton), Michelle Cruz (California State Univ., San Marcos), Fangyuan Hong (Mount Holyoke College). **A meta-analysisof coastal populations: Genetic diversity of species throughout their range.**

36. Vivian Anyaeche (Fisk Univ.), Tashika James (LeMoyne Owen University), Taylor Kuramoto (Augsburg College), Taylor Nelson (Univ. of North Carolina, Chapel Hill). **An epidemiological model of bovine respiratory syncytial virus infection dynamics.**

37. Winode Handagama (Maryville College), Nitin Krishna (Western Kentucky Univ.), Margaret McDaniel (Univ. of Tennessee). **Quantifying limits on replication, death, and quiescence of *Mycobacterium tuberculosis* in mice.**

NICS Posters

38. Louis Xiang (Chinese Univ. of Hong Kong). **Analysis of high dimensional data via topology.**

39. Terrence Tian (Chinese Univ. of Hong Kong), Allan Richmond Morales (George Washington Univ.). **Runtime system and out-of-core Cholesky factorization on the Intel PHI system.**

40. Sarah Zinn (Ohio Northern Univ.), Selina Arrington-Byod (North Carolina Central Univ.). **The effect of basis sets on the absorption spectra.**

41. Ivan Au-Yeung (Chinese Univ. of Hong Kong). **Vascular fluid structure simulation.**

42. Caroline Su (Univ. of California, Berkeley), Alexander Cope (Centre College). **Modeling the effect of increased glucose concentration on intraocular pressure.**

43. Jason Coan (Maryville College), Zarie Ali (Morehouse College). **Associative memory implementation using tuple spaces.**