Material for CINES Landing Page

(Date: April 16, 2020)

Vision: CINES (pronounced "science") is a self-sustaining cyberinfrastructure that will be a community resource for network science. CINES is an extensible platform for producers and consumers of network science data, information, and software. Domain scientists can use CINES to obtain interesting insights to advance their fields. Major components of CINES include a messaging infrastructure to route job requests and other data/information; infrastructure services for system monitoring, security, continuous testing, and resource management (for submitting jobs), among others; common (app) services such as a digital library and visualization; various applications that will include web apps, individual codes, desktop apps, and software libraries; a workflow engine to compose common services and apps; a user interface (UI) for interactive use through a browser; and an API to service third party software requests.

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(g) Organization: Los Alamos National Laboratory, Los Alamos, NM
Contact: Aric Hagberg (Computer, Computational and Statistical Sciences Division)

(h) **Organization**: Kitware, Inc., Clifton Park, NY
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(i) **Organization**: Network Repository (www.networkrepository.com)
      Contacts: Ryan Rossi and Nesreen Ahmed

Scientific Advisory Board:

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Links to Educational Materials on Network Science:

I. Lecture Notes and Other Material Based on Courses:

- Réka Albert, Pennsylvania State University, State College, PA. Lecture notes for the course *Elements of Network Science and Applications* can be downloaded from https://www.ralbert.me/teaching.html.

- **(New)** Amir Arjolu, Massachusetts Institute of Technology, Cambridge, MA. Lecture notes and other materials for the course *Introduction to Network Models* are available at: https://ocw.mit.edu/courses/civil-and-environmental-engineering/1-022-introduction-to-network-models-fall-2018/.

- Albert-László Barabási, Northeastern University, Boston, MA. Online book entitled *Network Science* is available at http://networksciencebook.com.

- Aaron Clauset, University of Colorado, Boulder, CO. Materials used for the course *Network Analysis and Modeling*, can be accessed from http://tuvalu.santafe.edu/~aaronc/courses/5352/#Schedule.

- David Easley and Jon Kleinberg, Cornell University, Ithaca, NY. An online version of the book *Networks, Crowds and Markets: Reasoning About a Connected World*, Cambridge University Press, 2010, can be downloaded from https://www.cs.cornell.edu/home/kleinber/networks-book/networks-book.pdf.

- **(New)** Tina Eliassi-Rad, North Eastern University, Boston, MA. Lecture Notes and other material for the course *Introduction to Network Science: Theory, Algorithms, and Applications* are available from: http://eliassi.org/netsci11.html.

- David Kempe, University of Southern California, Los Angeles, CA. Lecture notes for the course *Structure and Dynamics of Information in Networks* are available from http://david-kempe.com/teaching/structure-dynamics.pdf.

- Natarajan Meghanathan, Jackson State University, Jackson, MS. Materials for the Fall 2019 offering of the course *Network Science* can be accessed from http://www.jsums.edu/nmeghanathan/csc641-fall2019/.

- S. S. Ravi, University at Albany – State University of New York (UAlbany), Albany, NY. Course materials for the class *Network Science* taught during Fall 2015 can be accessed from https://www.albany.edu/~ravi/csi660_index.html.

- Stanford University, Stanford, CA. Materials for the course *Social and Information Network Analysis* taught during Autumn 2015 can be accessed from http://snap.stanford.edu/class/cs224w-2015/handouts.html.

- Boleslaw Szymanski, Rensselaer Polytechnic Institute (RPI), Troy, NY. Materials for the Fall 2018 offering of the course *Frontiers of Network Science* can be accessed from http://cs.rpi.edu/~szymansk/fns.18/.

- **(New)** Leonid Zhukov and Ilya Makarov, National Research University, Higher School of Economics, Moscow, Russia. Materials for the Winter-Spring 2017 offering of the course *Network Science* can be accessed from http://www.leonidzhukov.net/hse/2017/networkscience/#textbooks.

II. Links to Video Lectures: (New)

- Video Lecture on Network Science by Renaud Labiotte (Oxford University, UK): https://www.youtube.com/watch?v=L6CqqlILBCI.

- Video Lecture on Introduction to Network Science by Leonid Zhukov (National Research University Higher School of Economics, Russia): https://www.youtube.com/watch?v=UHnmPu8Zevg.

- A number of videos on various aspects of Network Science are available from the Yale Institute for Network Science: https://yins.yale.edu/lecture-videos.

- Several video lectures by Damon Centola on various aspects of Network Science are available from: https://www.coursera.org/lecture/networkdynamics/2-2-introduction-to-network-science-VOUwR.

III. Links to Tutorials on Network Science and Related Topics: (New)

- Several tutorials by Katya Ognyanova (Rutgers University, New Brunswick, NJ) are available at: https://kateto.net/tutorials/.

- A video tutorial entitled "Network Analysis Made Simple" by Eric Ma (DataCamp) is available at: https://www.youtube.com/watch?v=ED4NZ-4EWRw.

IV. Links to Online Courses on Network Science and Related Topics: (New)

Note: Some of these courses require a fee.

- A list of courses on Network Science and related topics offered by Coursera is available at: https://www.coursera.org/courses?query=network%20analysis.

- Information regarding a course on Introduction to Network Analysis in Python offered by DataCamp is available at: https://www.datacamp.com/courses/network-analysis-in-python-part-1.

- Information regarding a course on Social Network Analysis offered by EdX is available at: https://www.edx.org/course/social-network-analysis-sna.

Publications Related to CINES:

- S. E. Abdelhamid, R. Alo, S. M. Arifuzzaman, P. Beckman, M. H. Bhuiyan, K. Bisset, E. A. Fox, G. C. Fox, K. Hall, S. M. S. Hasan, A. Joshi, M. Khan, C. J. Kuhlman, S. Lee, J. P. Leidig, H. Makkapati, M. V. Marathe, H. S. Mortveit, J. Qiu, S. S. Ravi, Z. Shams, O. Sirisaengtaksin, R. Subbiah, S. Swarup, N. Trebon, A. Vullikanti and Z. Zhao, "CINET: A CyberInfrastructure for Network Science", *Proc. 8th IEEE International Conference on eScience* (eScience 2012), Chicago, IL. Oct. 2012, pp. 1–8.

- S. E. Abdelhamid, M. Alam, R. Alo, S. M. Arifuzzaman, P. Beckman, T. Bhattacharjee, M. H. Bhuiyan, K. Bisset, S. Eubank, A. Esterline, E. A. Fox, G. C. Fox, S. M. S. Hasan, H. Hayatnagarkar, M. Khan, C. J. Kuhlman, M. V. Marathe, N. Meghanathan, H. S. Mortveit, J. Qiu, S. S. Ravi, Z. Shams, O. Sirisaengtaksin, S. Swarup, A. Vullikanti and T. Wu, CINET 2.0: A CyberInfrastructure for Network Science, *Proc. 10th IEEE Intl. Conference on eScience* (eScience 2014), Sao Paulo, Brazil, Oct. 2014, pp. 324–331.

- C. Dumas, D. LaManna, T. M. Harrison, S. S. Ravi, L. Hagen, C. Kotfila and F. Chen, "E-petitioning as Collective Political Action in We the People", *Proc. iConference 2015*, Newport Beach, CA, March 2015 (20 pages).

- C. Dumas, D. LaManna, T. M. Harrison, S. S. Ravi, L. Hagen, C. Kotfila and F. Chen, "Examining Political Mobilization of Online Communities through E-petitioning Behavior in We the People", *Big Data and Society* (an online journal), Vol. 2, No. 2, July–December 2015, pp. 1–20.