Assignment: Finding Topics and Related Research

This assignment is based on the discussion in the contact hours on Tuesday (June 26, 2012). The purpose of this assignment is to create additional context for finding and defining a specific research problem.

1. This question refers to the article:
    "Scientific Methods in Computer Science" by Gordana Dodic-Crnkovic available from http://www.mrtc.mdh.se/publications/0446.pdf.
    The article is also available the Dropbox folder of the Networking class in the "other" subdirectory.

    a. What are the key points of the "scientific method" as discussed in the paper?
    b. According to the paper, what is special about the "scientific method in computer science" (as opposed to the general description in Section 2)?

2. The following questions are about your research goals and plans.
    a. Describe in a few sentences the research topic in computer science or information technology where you intend (or would like to) work in. Note: Even if you consider multiple research topics, for the purpose of this assignment, you can only select a single topic.

    b. Map the topic of your research to one or more research area(s) of computer science (CS) or information technology (IT).
        *   Descriptions of CS research areas are found in the above article or at http://www.cs.cmu.edu/research/areas/
        *   A list of IT research areas is given below.
        *   **Note:** Lists of research areas are subjective. You can find more lists of IT or CS areas by googling "research areas computer science" or "research areas information technology".
    c. Provide a justification of your choice(s) in part (b).

3. This is a follow-up question to your answers in (2a) and (2b).
    a. Find two scientific journals or conferences related to your research topic given in (2a). The journals should be of good quality.
        *   Note: The title of the journal or article should be as specific as possible (e.g., "Transactions on Ad Hoc Networks" is specific, "Journal of Computer Science" is not specific to an area).
        *   For a conference, provide the full title, date, location, and URL of the conference. For an annual conference, provide the information for 2011.
    b. Describe how you determined that the journals or conferences are of "high quality."

4. This is another follow-up question to your answers in (2a) and (2b).
   a. Find two frequently cited articles immediately related to the research topic given in (2a).
      - You could use Google Scholar to get citation counts of an article.
      - **Note:** The number of citations is not always a good measure of the quality of an article. On the other hand, a low number of citations often indicates low impact.
   b. Briefly describe how the articles from (a) relate to your research topic.

Areas of Information Technology (Selection):

Social networking
Data Mining and applications
Mobile Computing and new forms of work
RFID Applications in Manufacturing, Retail and other areas
Cloud computing applications and architectures
Business Intelligence
Database & Information Systems
Distributed Systems/Ubiquitous Computing
Internet Systems & Infrastructure
Collaborative Virtual Environments
Computational Intelligence
Computers and Society
Distributed Systems and Cooperative Systems
Energy Informatics and Sensor Networks
Enterprise Computing
Image Processing
Machine Learning and Data Mining
Medical Informatics
Simulation and System Dynamics
Knowledge Representation & Reasoning
Security and Privacy
Systems Reliability/Dependability
Probabilistic Methods & Game Theoretic Methods