



*Welcome*

<https://ece.uwaterloo.ca/~ece655/>

**ECE 655**

**Protocols, Software and Issues in Mobile Systems**

Sagar Naik

EIT 4174

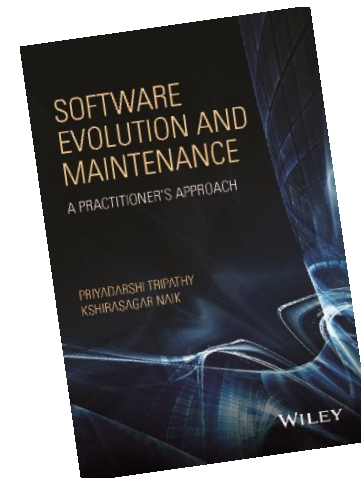
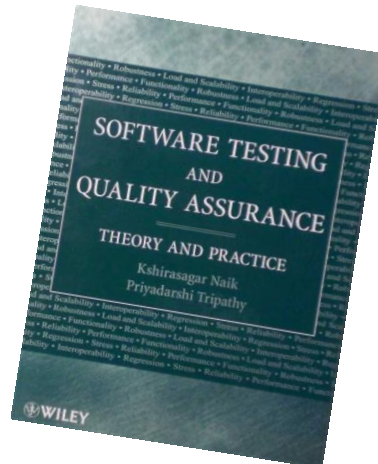
snaik@uwaterloo.ca

# About the Instructor

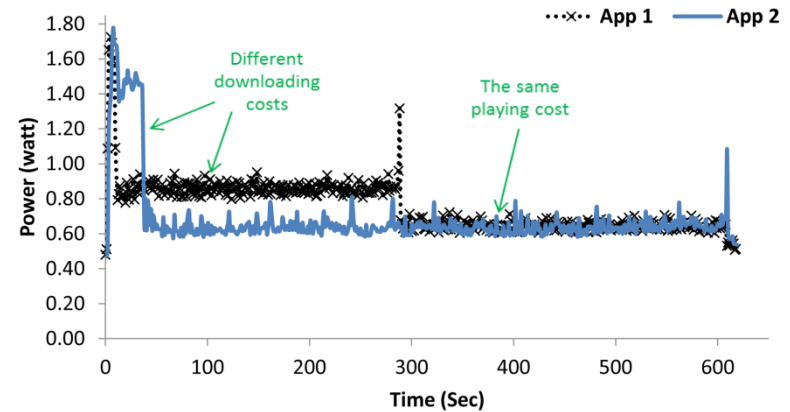
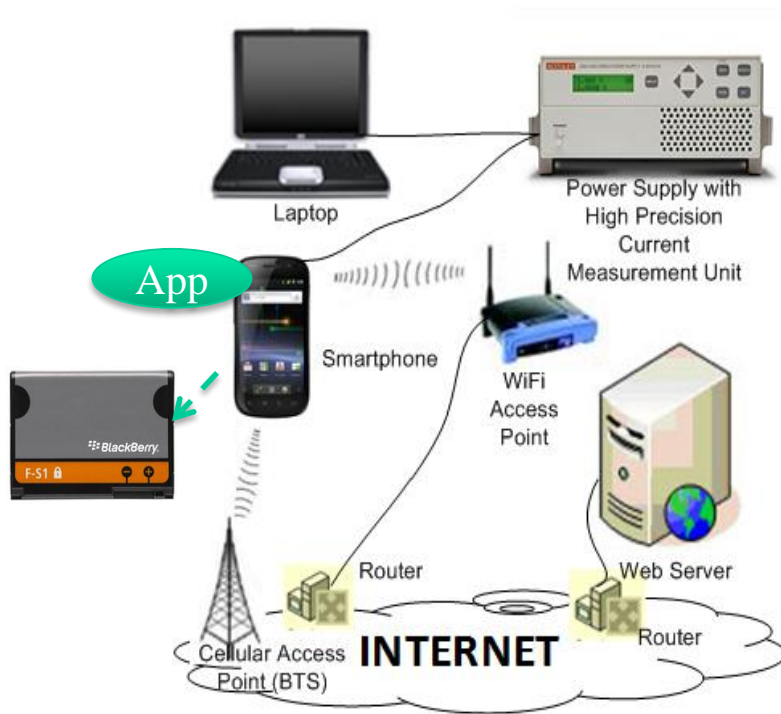
- Research interest
  - Wireless networking and mobile computing
  - Intelligent Transportation System (vehicular networks)
  - Energy cost modeling of software and protocols
  - Communications for smart power grids
  - Internet of Things
  - Power efficient software applications for data centres

# About the Instructor

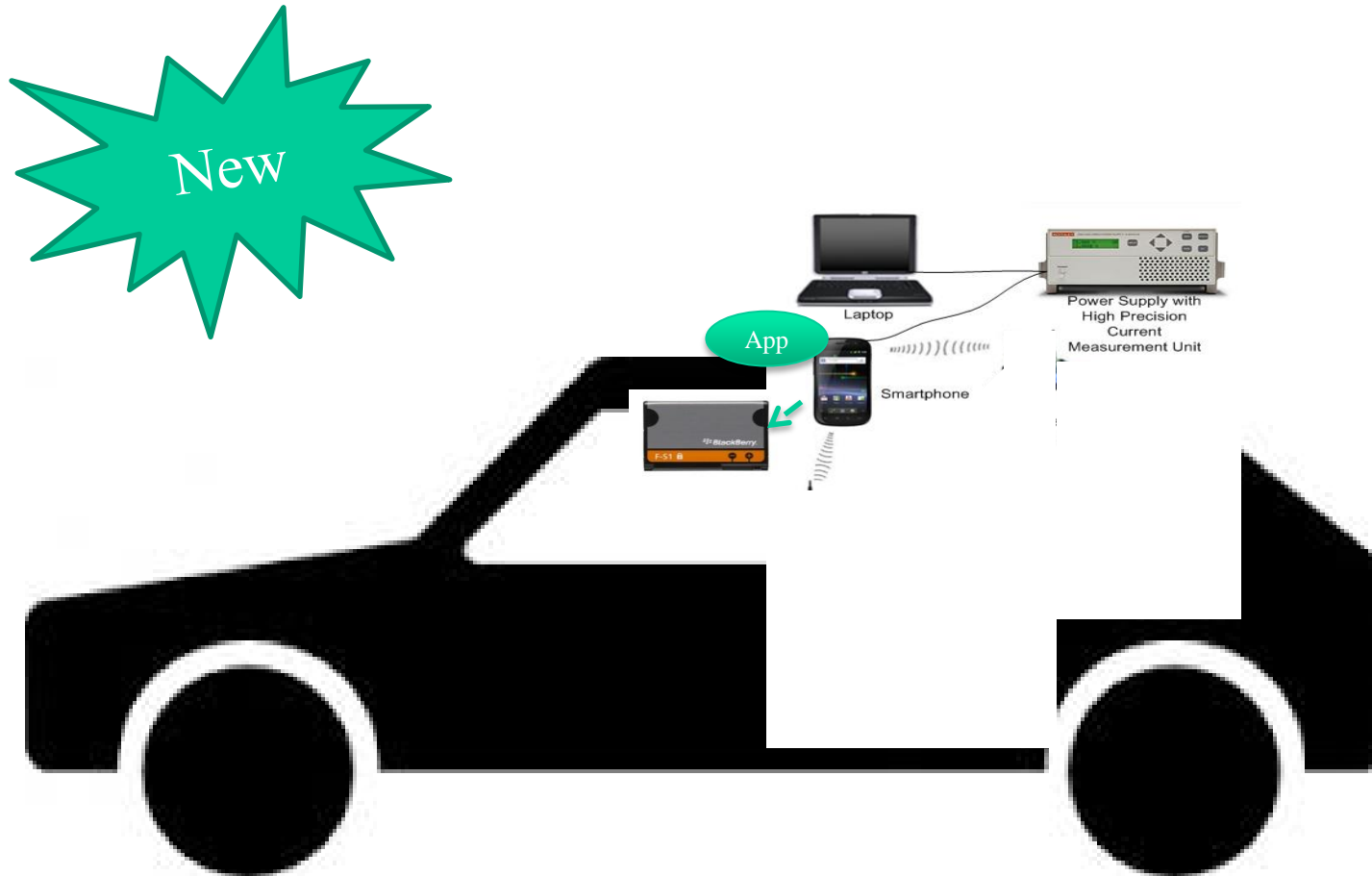
- Teaching interest
  - Networks: ECE 358, 416, 655
  - Software Eng.
- Books:
  - *Software Testing and Quality Assurance: Theory and Practice*, Wiley, 2008
  - *Software Evolution and Maintenance: A Practitioner's Approach*, Wiley, 2014



# A test bench for energy cost measurement



# A mobile test bench for energy cost measurement



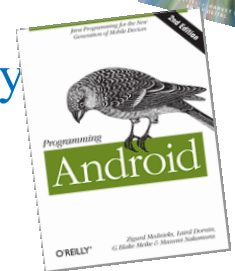
# Scope of ECE 655

- Telecommunication systems
- Energy management for smartphones
- Challenges in mobile app development
- Ad hoc networks
- Broadcasting
- Support for mobility, mobile IP, mobile TCP
- Class presentations + Course review (3.5 weeks)



# Course materials + support

- Lecture notes: online
- Research articles: online
- Suggested books
  - Mobile Communications, J. Schiller, 2<sup>nd</sup> Ed. Addison-Wesley
  - Android for Programmers, Deitel, et al., 2<sup>nd</sup> Ed., Prentice Hall
    - With 7 fully coded Android apps
  - Programming Android, Z. Mednieks, et al., 2<sup>nd</sup> Ed., O'Reilly
- Access to my lab



# Grading Scheme

- Final exam [50%]
- Programming projects [30%]  
(0 + 5 + 10 + 15)
- Research report + In-class presentation [20%]



**Note:** Write your report in your own style.

Avoid “copy-paste.”

Authenticity of your report will be verified with software tools available (e.g., *Turnitin*) in UW.



# Research Reports

- To be done in groups of two.
- Nature of your reports
  - Mobile software engineering
  - Test automation tools for mobile apps
  - Data analytics tool for smartphones and mobile apps
  - Mobile advertisements
  - ...
- Sources
  - Conference/journal papers
- Milestones

■ Outline:	October 23	(~1 page in IEEE style)
■ Final Report:	Dec. 4	(~10-12 pages)

Before we  
move  
forward

## Sense the class



How many have taken an undergrad course in computer networks?

- MAC protocols (Aloha, CSMA/CD, CSMA/CA, ...)
- Internet Protocols layer
- Transport Protocols layer

How many have taken an undergrad course in software engineering?

How many have Java programming skill: beginners, int., expert?

How many have programmed for Android devices?