Doing GREAT Research

S. Keshav
University of Waterloo
December 10, 2007
GREAT Research

- Grounded
- Risky
- Ethical
- Absorbing
- Thorough
Grounded Theory Assumptions
Grounded

- Look for gap between hype and reality
- Use appropriate theory
- Assumptions are critical
  - Be the harshest critic of your own work
- Prepare to move on
Risky

Envision your goal

Bridge of research

How will it change the world?

Chasm of uncertainty

Reward

Risk
Ethical Funding sources
Credit
Absorbing

Talks

Unexpected results

Read widely

Share your ideas

Collaborate
Absorbing

- Be passionate
- Read widely
- Attend diverse talks
- Share your ideas
  - Maintain a research site
Thorough
Being thorough

- Always begin with a literature survey
- Start with the smallest non-trivial instance
- Learn as you go
- Prepare to change
- Crystallize solutions
- Keep an eye open for the unexpected
- Carry a notebook
On writing papers

• Publish, but not at any cost
  • Quality trumps quantity
• Avoid gratuitous math
• Fuzzy writing indicates fuzzy thinking
• Use the one week rule
• Hone your writing and thoughts
• Rejection strengthens your work
On giving talks

- One idea per slide
- Two minutes per slide
- Audience can remember only three things
- Impact is inversely proportional to word count
- Start with a compelling example
- End on time!
On attending talks

• Take detailed notes
• Attend talks in diverse areas
• Ask questions
  • It keeps you from sleeping
The bottom line

• Have fun doing research!
• You’re not going to make any money anyway :-)