

# Now What?

Opportunities & Challenges for a Computer/Software Engineer in the 21<sup>st</sup> Century

By  
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- What is this about?
- The Numbers
- What IS Computer/Software Engineer
- Industry Opportunities
- Technology-based Entrepreneurship
- Q&A

## Agenda

# The “Truth”

**What is this about?**

**Will I have a job when I  
graduate?**

**First things, First.**

- Software/Computer Engineer is ranked #1 by compensation.\*
- Ranked #2 for growth @ 46.07%

**The Good News**

\*Best Jobs in America by  
CNNMoney.com

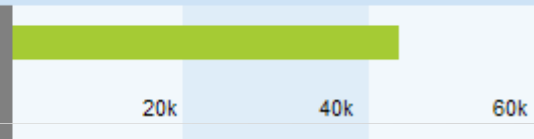
- According to the National Association of Colleges and Employers, starting salary offers for graduates with a bachelor's degree in computer engineering averaged \$56,201 in 2007.

**More Good News!**

### Average Software Engineer Salaries in San Juan, PR

[Software Engineer](#) \$44,000

In USD as of Apr 21, 2008



Courtesy of



**Doh!**

**So what?**



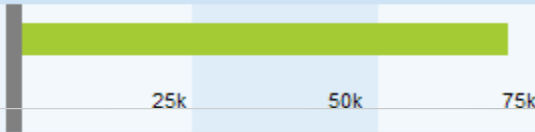




### Average Computer Engineer Salaries

[Computer Engineer](#) \$69,000

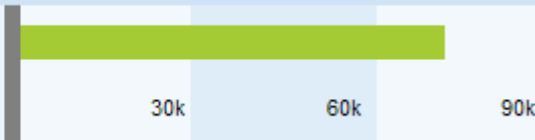
In USD as of Apr 30, 2008



### Average Software Engineer Salaries

[Software Engineer](#) \$72,000

In USD as of Apr 30, 2008



Courtesy of



# The Numbers

# What IS a Computer Engineer?

“A scientist builds in order to learn; an engineer learns in order to build”

Fred Brooks

**What CAN you do?**

**The Problem**

**Be Proactive!!**

**Raytheon**



**Microsoft®**



**stryker®**





- Know your target company inside/out.
  - Vision/Products/Culture
- Learn FPGA development tools (e.g. SystemC).

**Embedded Systems**



# The Exoskeleton

- Defense contractors are at the cutting edge of both technologies.

## **Communications & Signal Processing**

- Focus on problems, not technologies.
  - Code flavors depend on industry selection:
    - Flex/Ajax/Silverlight/Ruby on Rails for Web 2.0
    - .Net 3.5 for Smart-clients (LOB)
  - Read “Writing Secure Code” by Michael Howard & “Code Complete 2<sup>nd</sup> Edition” by Steve McConnell....once...a year.

**Computing Systems**

- **Communications and Signal Processing**
  - Raytheon, Boeing, Lockheed, NASA
- **Hardware And Embedded Systems**
  - TI, IBM, HP, Dell, Intel, AMD
- **Computing Systems**
  - Microsoft, Google, Facebook, Accenture

**US-based Companies Per Specialty**

- **Communications and Signal Processing**
  - Centennial, WorldNet, BIVA
- **Hardware And Embedded Systems**
  - Medtronic, Stryker, Boston Scientific
- **Computing Systems**
  - Evertec, InfoTech, RST, Honeywell, TrueNorth Corp, INVID, Simple Engineering

**Companies in PR by Specialty**

- P.E./M.D. - Medicine
- P.E./J.D. - Law
- P.E./M.P.H. – Public Health
- Any combination of the above.

**Non-Traditional Career Tracks**

- Artificial Neural Networks
  - Self-healing Application Services
  - Swarm Intelligence/Robotics
  - Bionics (Robotics 2.0)
  - Molecular Modelling of Nanomaterials
- 
- Use SBIR/STTR to fund research!!
    - Small Business Innovation Research/Small Business Technology Transfer

**The Future**



# Technology-based Entrepreneurship

- Focuses on a specific product or technology.
- Has the highest potential for growth.

facebook®



GuruNet\*

digital  
en v o y



FilmLoop

simply|hired

kaboodle



**How do you do it?**

- Choose your partners well.
- Build a team.
- Be open & honest.
- Have a vision.
- Think about money last.
- Respect your peers.
- Understand your market.
- Have advisors.

## Lessons Learned

- International Association of Software Architects (IASA)
- The Open Group

## **Tendencies in World Wide Regulation of Computer/Software Engineering**

- Dozens of organizations are dedicated to your success....RUM students enjoy a single point of contact: the CELSPR (CIAPR).
- Join the IICOM-RUM Chapter.

**Who can help me?**

A

&

Q



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- **Professional Software Development: Shorter Schedules, Better Projects, Superior Products, Enhanced Careers.** 241 pages, Boston, MA: Addison-Wesley, 2004 – CH. 4 “Software Engineering, not Computer Science”.
- “Software Engineering Programmes Are Not Computer Science Programmes”, IEEE Software, Nov/Dec 1999
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## Bibliography