The Future of Mobile Learning

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October 7, 2016
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COURSEMIRROR HOMEPAGE AND MOBILE APP
CourseMIRROR Improves STEM Education via Natural Language Processing (NLP), Visualization, and Mobile Interfaces. Android Apps, Web apps optimized for PCs and major mobile OSes are available for free download.

RECENT NEWS

Our paper on LivePulse Games has been accepted by ACM CHI 2015. Congratulations to Teng, Xiang, and Lanfei!
- ACM CHI 2015

Our paper on AttentiveLearner has been accepted by AIED 2015. Congratulations to Phuong!
- AIED 2015

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My Research Interests

Mobile Interfaces

Education Technology
Previous & Current Undergraduate Researchers

• Andrew Head (ToneWars & e-Chimera)
  – Ph.D. student in UC Berkeley
• Jesse Thomason (ScatterDice Mobile)
  – Ph.D. student in U Texas Austin
• John Selker (6DOF Docking on Mobile Devices)
  – IBM Pittsburgh
• Yunxin Liu (LivePulse)
  – Amazon.com
• Vincent Tran (Kanji Tutor)
  – Amazon.com
• Gangzheng Tong & Zac Yu (CourseMIRROR)
LensGesture: Back-of-Device On-Lens Finger Gestures

[ICMI 2013] Source code (BSD License) at http://mips.lrdc.pitt.edu/lensgesture
LivePulse Games: Implicit Heart Rate Tracking via Mobile Game Play

[CHI 2015] Source code (BSD License) at http://mips.lrdc.pitt.edu/livepulsegames
BayesHeart: A Probabilistic Approach to Extract Heart Rates from Noisy, Intermittent Signals

[IUI 2015] Source code (BSD License) at http://mips.lrdc.pitt.edu/bayesheart
The Challenges and Opportunities in Mobile Computing
Apple iPhone 7 in 2016

~ 210 GFLOPS
The phone in your pocket may be faster than the supercomputer in 1993.

~ 143 GFLOPS
Clifford Mass
Professor of Atmospheric Sciences
University of Washington
http://www.atmos.washington.edu/mass.html
Atmospheric Sciences 101 Math Assessment

This is only for helping me design the homeworks/quizzes. NO CALCULATORS. No name needed.

Your High School _______________ City and State of your HS _______________

1. Arithmetic

(a) \( \frac{1}{0.1} = \)

(b) \( 2^7 = \)

(c) \( 64^{1/2} = \)

(d) \( 2^{-2} = \)

(e) \( \frac{25 \times 10^3}{5 \times 10^{-5}} = \)

(f) \( 231/7 = \) (no calculator, to the tenths place)

2. Express in scientific notation

(a) \( 0.00012 \)

(b) \( 300,000 \)

3. Geometry and Trigonometry

(a) The formula for the area of a circle is:

(b) Using the diagram at the right, \( \cos \alpha = \frac{a}{b}, \frac{b}{a}, \frac{a}{c}, \frac{d}{a}, \frac{b}{c}, \frac{c}{b} \) (circle the right answer)

4. Algebra

(a) \( PV = nRT; \) solve for \( T. \)

(b) \( y = \frac{x}{(1-x)}; \) solve for \( x \)

(c) \( \frac{a}{x} = \frac{b}{c}; \) solve for \( x \) in terms of \( a, b, c \)
Atmospheric Sciences 101 Math Assessment

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Your High School ________________ City and State of your HS ________________

1. Arithmetic

(a) \[ \frac{1}{0.1} = 10 \] 74% 

(b) \[ 2^3 = 8 \] 91% 

(c) \[ 64^{1/2} = 8 \] 64% 

(d) \[ 2^{-2} = \frac{1}{4} \] 48% 

(e) \[ \frac{25 + 10}{5 + 10} = \frac{5}{\cdot} \] 25% 

(f) \[ 231/7 = \) (no calculator, to the tenths place) 33 57% 

2. Express in scientific notation

(a) \[ 0.00012 = 1.2 \times 10^{-4} \] 58% 

(b) \[ 300,000 = 3 \times 10^5 \] 70% 

3. Geometry and Trigonometry

(a) The formula for the area of a circle is: \[ \pi r^2 \] 57% 

(b) Using the diagram at the right, \[ \cos \alpha = \frac{a}{b} \] 53% 

4. Algebra

(a) \[ \frac{PV}{nRT} \] solve for \( T \) 87% 

(b) \[ y = \frac{x}{1-x}; \] solve for \( x \) 

(c) \[ \frac{a}{x} = \frac{b}{c}; \] solve for \( x \) in terms of \( a, b, c \) 

Overall 58% 

202 Students
Can we use the “supercomputer in our pockets” to learn more effectively?
Opportunities in Next Generation
Mobile Learning

Learning in Large Classrooms  Informal Learning  MOOC Learning
Scalable Reflection Prompts via Mobile Interfaces and Natural Language Processing
ToneWars: Connecting Language Learners and Native Speakers through Collaborative Mobile Games
AttentiveLearner: Improving Mobile MOOC Learning via Implicit Physiological Signal Sensing

Cover the lens = $

Uncover the lens = $

Contact Methods

• Email: jingtaow@cs.pitt.edu

• Office Hours
  – 1:30PM – 2:30PM Tuesday, Thursday
  – SENNSQ 5423

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