Jackson, MS, Public Schools JROTC STEM Competition and Field Day Outreach Project

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Research

Bayesian Uncertainty Quantification and Non-deterministic Design Optimization
Bayesian Application to Evidence in Interval Form

Bayesian probability:
• Represents a state of knowledge.
• Updated with data.

Bayes’ Rule:
\[ f(H|E) = \frac{L(E|H)P(H)}{\int_{-\infty}^{\infty} L(E|H)P(H)dH} \]
Outreach

Jackson Public Schools
Presentation
Project
Stem Experience Day
Jackson Public Schools

• Seven High Schools
  – 2012 Mississippi Achievement Report
    • Report Card: F F F D D C C
    • 31k students, 2k teachers
    • In STEM subjects Biology and Algebra 2.5% and 16% of students scored as advanced, respectively. 25% and 12% scored minimal
  – Demographics
    • 3 100% African American
    • Minority percentages: 99%, 97.9%, 97.35%, 94.7%
  – 5 year graduation rate of 65%
  – 80% of students live in poverty

• JROTC Program
• 1900 enrolled students
  – 99% graduation rate
The Project

• 10 Data Entries
  – Reading comprehension passage
  – Maximum decibel reading (minimum 5 feet)
  – Maximum sound duration
  – Time to complete passage
  – Distraction level (1 to 10)
Return of the Presentation
Winners and Participants
Stem Day: Facilities Tour

Patterson Labs:
Home of Mississippi State Space Cowboys Rocket Design Team
Stem Day: Speakers
Stem Day: Egg Drop
Stem Day: Golf Experience
Project Success

• Initial presentation attendance ~150 students

• Presentations from 18 groups

• 45 cadets attended STEM Experience Day