Bracket 1

Entrant Information

I am submitting this entry as:

a team leader on behalf of my team

Big Idea Information

Title of your Big Idea

High Frequency Data Streams in Education

Upload an image to represent your Big Idea or your team.

https://skild-prod.s3.amazonaws.com/nsfideamachine/uploads/2821055457351-team139576-entry125253-section63687-im.jpg

What are your scientific or engineering research interests or areas of expertise?

education

What is the compelling question or challenge?

Avery developed science is the result of the scrupulous analysis of a vast amount of data. Education needs reliable procedures for high frequency "datamining".

What do we know now about this Big Idea and what are the key research questions we need to address?

High frequency "datamining" has never been used in education.

The proposal has been developed by Prof. Plamen Ivanov and I more than a year ago. Prof. Plamen Ivanov is the director of the Keck Laboratory for Network Physiology where he applies various data mining methods (and more) to study correlations with the physiological networks of a human body. We believe that similar methods can and need to be applied to study various aspects of learning and teaching practices of individuals and the groups of individuals.

Why does it matter? What scientific discoveries, innovations, and desired societal outcomes might result from investment in this area?

Currently the NSF has more interest in funding social-oriented projects in education (making improvements "here and now") than supporting fundamental research (no one can predict if, where, and how that research would bring fruitful social or economic results).

However, we hope the NSF may soon shift its approach to funding fundamental research in the field of education; the indication of this possibility is the NSF's call for "big ideas".
 The fundamental research in the field of education is much more than studying how an individual learns (e.g. refer to "How People Learn"). There are myriads of correlations between numerous factors which we don't even know yet. the NSF and a chance to establish a brand new field of scientific practice.

If we invest in this area, what would success look like?
1. Establishing a reliable procedure or procedures for developing a large amount of reliable data using techniques developed in other field (physics) for high frequency "datamining".
2. Development new teaching approaches and techniques based on the data analysis
3. Development of the new instruments, techniques, approaches for assessing the quality of teaching, measuring the content knowledge of students.

Why is this the right time to invest in this area?
Because USA does not want to fall behind China.
Because education is the most important human practice which does not have fundamental science to be based upon.

Please give us three key words describing the Big Idea.
Fundamental science of education, Data mining in education

Publication/Citation References (optional)

In the boxes below, you may list up to 3 publication/citation references, either by text or link.

Reference #1
Developing Strategies and Technology for Generation and Analysis of Longitudinal High Frequency Data Streams from Faculty and Students

Reference #1 URL
http://www.cognisity.how/2018/09/proposal.html
Reference #2
Developing Strategies and Technology for Generation and Analysis of Longitudinal High Frequency Data Streams from Faculty and Students: full proposal

Reference #2 URL
http://www.gomars.xyz/EduDataMining.pdf
Reference #3
How much of the NSF funded fundamental scientific educational research is really fundamental?

Reference #3 URL

http://www.cognisity.how/2016/12/NSF.html

Agreements and Validations

I consent to NSF's use and display of the submitted information and contestants' names and likenesses.

I agree

I confirm that all individual, teacher, and team entrants meet the age and citizenship/residence requirements, and agree to abide by all rules of the NSF 2026 Idea Machine as described in the
 eligibility criteria and rules
.
I agree

Forms and Releases

All individual and team entrants must be at least 14 years of age as of September 1, 2018.

Individuals: If you are under 18 years of age, please upload a completed parental/guardian permission form (located in the Quick Links to your left) here.

 Team leaders: Please collect the signed parental/guardian permission form for any team members younger than 18 years of age (including yourself) and combine them into one document to be uploaded here.

Teachers entering on behalf of high school classes are not required to submit parental/guardian forms on behalf of their classes.