Auto-Screening

Donors Choose

Posting Requests

Justin Mao-Jones
Charlie Guthrie
Lucy Wang
Yasumasa Miyamoto
DonorsChoose.org makes it easy to help classrooms in need. Public school teachers post classroom project requests which range from pencils for poetry to microscopes for mitochondria.
A crowd-funding site for school projects

Since inception in 2000...

- $283 million to school projects
- Fully funded 70% of 650,000 posted projects
- 1.5 million supporters
- 200,000 teachers
- 13 million students

Teach For the Planet: Printing For Understanding

Mr. Katz's technology project at Whitney Young Magnet High School in Chicago, IL | Highest Poverty

My Students: "In the end we will conserve only what we will love. We will love only what we understand. We will understand only what we have been taught." Baba Diom

My students need a 3D printer and scanner, along with filament, to build and design...

We are working to create an incredible opportunity, to create a professional collaborative project, between 10th-12 AP Environmental Science students, 11th-12th grade AP 2D Studio Art students, and 10th-12th grade Sculpture and Ceramics.

My students need a 3D-Printer, PLA and ABS filament, and a digitizer Desktop 3D scanner.

<table>
<thead>
<tr>
<th>materials</th>
<th>vendor</th>
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<tbody>
<tr>
<td>MakerBot Replicator Desktop 3D Printer</td>
<td>Nasco</td>
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any amount Give
$169 to go 35 donors

Half-off thanks to
Open Possibilities NBCUniversal

Save Share
Getting a Project Posted

Teacher → Project Request → Screener

“Needs Revisions”

Criteria:
- Be real
- Benefit students
- Explain why funding is needed
- Spell-checked
- Follows website rules

Looks Fine
Preprocessing

145,677 requests in 2014

50 volunteers

15 minutes/project

37,500 hours of review per year

The current screening process is unsustainable given the rapid growth of the organization.
Automated Processing

Teacher → Project Request → Robo-Screener

“Needs Revisions”

Robo-Screener → Screener

Looks Fine → May Have Issues → Looks Fine

Doesn’t have to be perfect: 30% reduction = 6,000 hours
"My students are a group of English Language Learners who have so many goals for themselves. Our big goal in reading is to grow two reading levels in one year. Our biggest challenge in reaching this goal is having the right reading material since every one of my students is below grade level. My students go to a district school four miles from the White House. Over 90% of my students have immigrated from South America, Central America, or Africa in order to capitalize on the opportunities this building represents. Without the right books, they will never be able to actually attain the goals they and their families have for them.

……"
How the Robo-Screener Works
My Students: "In the end we will conserve only what we will love. We will love only what we understand. We will understand only what we have been taught." Baba Diom

My students need a 3D printer and scanner, along with filament, to build and design ...  more

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"This field trip is for our Student Council. Our new council will be stepping up as leaders. My kids would like to have the opportunity to grow as learners. It will help my student council learn how to lead our school and do StuCo duties. The field trips would be $200 for transportation and $20/student for the event. This field trip could help my students. For more information and pictures, send me an email at clupone@gmail.com or visit http://stuco.stamfordschools.edu"

My students need ____________
## Our Model

### Project Data
- school location
- poverty level
- project type
- grade level
- class subject
- resource type
- school type
- funding request

### Extracted Essay Features
- dollar signs
- @ symbol, url
- missing values
- essay length

### Matrix of Essay Term Frequencies

\[
\begin{align*}
D_1 & : w_{11} & w_{12} & \ldots & w_{1t} \\
D_2 & : w_{21} & w_{22} & \ldots & w_{12} \\
\vdots & : \vdots & \vdots & \ddots & \vdots \\
D_n & : w_{1n} & w_{2n} & \ldots & w_{tn}
\end{align*}
\]

### Proposal Approval or Review

logistic regression model
Proposals for grades K-5 are 8% more likely to be approved.

Proposals from low-poverty schools were slightly less likely to be approved.
Model $\rightarrow$ Impact
## Model Performance

### Test Environment

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<th>Bad Projects Approval Rate</th>
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<tbody>
<tr>
<td>5%</td>
<td>1%</td>
<td></td>
</tr>
<tr>
<td>15%</td>
<td>5%</td>
<td></td>
</tr>
<tr>
<td>25%</td>
<td>10%</td>
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### Business Case

What is the appropriate threshold?
Data Challenge

Teacher

Project Request

“Needs Revisions”

Screener
Data Challenge

Teacher

Sentiment

Next Revision

“Needs Revisions”

Screener

Reality
18% need revision

Previous Revision

Current Data
3% need revision
What does this mean?

Exploratory Analysis → Better Data + Detailed Analysis → Scalable Production System
More Testing Recommended

Revision 1…
Revision 2…
Revision 3…
Next Steps

Testing in parallel to production system

Low Hanging Fruits

○ Detect ‘text’ not allowed in proposals, warn teachers
  email addresses, url links, prices, etc.
○ ‘Flag this project’ button

Business Case Discussions

○ What is the right threshold for approvals?
○ What are the costs vs benefits in the production system?
Questions?
Thank You!