The University of Nebraska at Omaha

IT Innovation Cup

*Innovations in Computer-Augmented Decision Making*

2017-2018
UNO IT Innovation Cup Guidelines  
University of Nebraska at Omaha  

Introduction
The UNO IT Innovation Cup is an annual competition between Nebraska and Iowa High Schools. Schools compete each year to determine who can create the most innovative, creative and best IT-based solution given the current year’s problem requirements. For 2017-2018, the challenge area is “Innovations in Computer-Augmented Decision Making.” The winning team is awarded the IT Innovation Cup (a traveling trophy) for their school and cash prize of $2,500 ($1,000 for second place, $500 for third place). Each high school team can have at least one but no more than three faculty coaches, and each team coach will receive an honorarium of $200 and free tuition to one College of Information & Technology (CIST) IT Professional Development Workshop. All participating students will receive free tuition to one CIST summer workshop and a CIST t-shirt.

2017-2018 Problem Requirements
The widespread adoption of technology in assisting everyday decisions made by users has improved human decision making, from online reviews of businesses and geo-spatial navigation devices, to smart-home technologies that make our lives more comfortable and secure. These technologies have enabled humans to rise above our innate decision-making biases and limitations of memory to perform complex tasks faster, more efficiently, and with more precision. The effects of these computer-augmented decision-making tools are felt across virtually all domains of modern society, such as consumer electronics, healthcare, automotive industries, aviation, disaster relief, and education. The grand challenge of our lifetime involves our ability to harness the power of our advanced computing devices and apply these tools in novel, effective, and ethical ways that help improve lives. Therefore, the goal of this competition is to:

“Use computing tools or devices to develop novel approaches or applications that augment human decision making in order to improve some aspect of society or everyday life.”

Teams should create a compelling solution that meets the identified need, through a series of 3 project milestones:

1. A medium-fidelity prototype of major user-facing aspects of the team’s novel idea,
2. Back-end programming of the functionality of the idea
3. Integration and refinement of the user-facing elements and back-end programming resulting in a final working prototype of the idea.

The project must result in a useful, IT-based solution and must be communicated in a variety of media including written papers, oral presentations, and online project portfolios. The solution needs to include new or novel software development, hardware configuration, and/or system setup.

Available Resources
All teams will be assigned a mentor from current UNO IT Innovation Collaborative students. These mentors will offer guidance, encouragement, and assistance for each team. The mentors
may not provide direct development work, but can assist with idea generation, debugging and problem solving, and clarifications of guidelines. They can also provide feedback on videos, papers and presentations prior to submission.

We will also provide a sample list of known web services and APIs. This will not be comprehensive, but should give teams a place to start. Teams are encouraged to look for other web services or ways to utilize these in novel ways.

Materials (hardware, etc.) for projects will be reimbursed up to $200 per team and itemized receipts are required for these reimbursements. Reimbursements should be requested from Janice Fink (jfink@unomaha.edu).

A free one-day workshop will be offered on October 24, 2017 at the Peter Kiewit Institute to help students start their development. Several technologies will be demonstrated. Faculty and staff from UNO will provide instruction on how to get started, help teams configure individual computers for development, and provide information about marketing a product. Additionally, upon request we will provide scheduled access to PKI computer labs, and will coordinate with the UNO Speech Center for any help required for presentation development.

Finally, all teams may have at least one but no more than three faculty members from their high school to serve as coaches, but all software, artwork, multimedia presentations, music, etc. must be performed by the high school students. Faculty coaches can provide basic debugging help and advising, but not code or development. Any team that is determined to have active development work from a faculty coach will be disqualified.

**Judging Criteria**
The competition is three-phased and points will be accumulated at four milestones. There are 1000 total points (broken out in detail below) and the team with the most points at the end of the competition will be the winner. The description of point allocation and judging criteria for each of the phases are shown in Appendix A.

*Proposal and Idea Generation Phase (80 Points)*
  - Problem refinement and ideation presentation 80 Points

*Medium-fidelity Prototype Phase (250 Points)*
  - Presentation of prototype 120 Points
  - Video demonstration of prototype 130 Points

*Back-end Development Phase (270 Points)*
  - Presentation of back-end functionality 120 Points
  - Written report and documentation 150 Points

*Integration and Refinement Phase (400 Points)*
  - Presentation of integrated prototype 200 Points
  - Demonstration of refined prototype 200 Points
Key Dates
- October 13, 2017 – Email of Intention to Compete Due
- October 24, 2017 – Kickoff Event and workshop at PKI
- November 14, 2017 – Problem Refinement and Ideation presentation
- January 6, 2018 – Medium-fidelity prototype presentation and video demonstration due
- February 5, 2018 – Back-end development presentation and report due
- March 9, 2018 – Integration and Refinement Presentation
- April 18, 2018 – Demonstration presentations and awards

Eligibility
- For 2017-2018, competing high schools must be in the Greater Omaha area
- Each high school is allotted one team
- Each team must consist of no more than ten students, not including faculty coaches
- Diverse teams are encouraged; a great team will usually involve artists, programmers, project managers, marketers, etc.

How to Enter
To apply, student teams must submit a brief email to unoinnovationcup@gmail.com by October 13, 2017. The email should state:
- The high school the team represents
- Contact information of the faculty coaches
  - Full name
  - Best contact phone number
  - Best email address
- For each student team member:
  - Full name
  - Email address
  - Expected graduation date
- The number of the student team members that plan to attend the workshop on 4 November.

Team Members
In the initial email to enter the competition, the members of the team must be identified. However, new team members can be added until the presentation on January 26, 2018. Teams cannot have more than 10 student members and no more than 3 faculty coaches. After January 26, 2018, teams cannot add new members, but team members can be removed. In order to remove, add, or replace a team member, a team must notify the IT Innovation Cup committee of the desire to remove, add, or replace a member and then receive an email confirmation from the IT Innovation Cup committee that the team structure has been updated.

Prizes
The first place team receives $2,500, first runner-up receives $1,000 and second runner-up receives $500. There will also be a new prize this year called the “People’s choice” winner. This team will be determined by a public vote at the final event. This vote will not impact the score of the overall winner, but the team that wins this vote will receive a $500 prize.
APPENDIX A – Detailed Judging Criteria

Problem Refinement and Ideation Presentation (80 Points)

DUE: 5:00 PM, 14 November 2017
Submitted via email to: unoinnovationcup@gmail.com
Presented at PKI

This milestone evaluates the teams’ ability to present a refined project description and problem that their innovation will address. Teams will present a refined problem statement that they seek to address, complete with the scope and frame of the project. Teams will also present their idea generation process and selected top 3 ideas for further development. Since the direction of the project will be largely determined at this stage, teams will give and receive feedback to one another. Each team’s presentation must be at least 5 minutes and no more than 7 minutes. The presentation should:

1. Clearly identify the need that the solution satisfies
2. Present the teams’ top 3 ideas that were generated to satisfy this need.
3. Answer these questions:
   a. Who is it for?
   b. How will it benefit them?
   c. How do you know it will benefit them (e.g., research performed)?
   d. Are they willing to pay for it?
   e. Who else is trying to solve this problem?
4. Explain results and effects of the project

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Description</th>
<th>Possible Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>Project Description</td>
<td>Good presentation introduction</td>
<td>10</td>
</tr>
<tr>
<td>Need</td>
<td>The need is relevant, real, and well-thought out</td>
<td>25</td>
</tr>
<tr>
<td>Generated Concepts</td>
<td>Effective idea generation techniques used</td>
<td>25</td>
</tr>
<tr>
<td>Time Control</td>
<td>Over 5 minutes (show sufficient content)</td>
<td>10</td>
</tr>
<tr>
<td>Presentation Quality</td>
<td>Slides are neat, orderly Good eye contact with audience around the room Clear voice, loud enough to hear in the back row Display of enthusiasm and appropriate gesturing</td>
<td>10</td>
</tr>
</tbody>
</table>
Medium-Fidelity Prototype Presentation Guidelines (120 Points)

DUE: 5:00 PM, 6 January 2018
Submitted via email to: unoinnovationcup@gmail.com
Presented at PKI

This milestone evaluates the teams’ ability to develop and present their technological innovation using low-fidelity techniques to communicate the intent and functionality of the project. Each team’s presentation must be at least 7 minutes and no more than 10 minutes. The presentation should:

1. Briefly and crisply describe the innovation
2. Discuss the approach, platforms, and process of developing a medium-fidelity prototype.
3. Explain the basics of the innovation functionality using paper, cardboard, electronic, or ‘Wizard of Oz’ prototyping techniques.

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Description</th>
<th>Possible Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>Innovation Description</td>
<td>Good presentation introduction Clear, succinct description of the innovation The scope and purpose of the prototype is clearly defined</td>
<td>20</td>
</tr>
<tr>
<td>Prototype</td>
<td>Sufficient detail and functionality in the prototype Prototype successfully communicates the most important or distinguishing features of the innovation. Prototype is well crafted</td>
<td>40</td>
</tr>
<tr>
<td>Time Control</td>
<td>Over 7 minutes (show sufficient content) Under 10 minutes (shows control over presentation flow and time constraints)</td>
<td>10</td>
</tr>
<tr>
<td>Development Progress</td>
<td>Evidence of technical progress is presented Development efforts are solid and a clear path to completion is presented</td>
<td>30</td>
</tr>
<tr>
<td>Presentation Quality</td>
<td>Slides are neat, orderly Good eye contact with audience around the room Clear voice, loud enough to hear in the back row Display of enthusiasm and appropriate gesturing</td>
<td>20</td>
</tr>
</tbody>
</table>
Video Demonstration of Prototype Guidelines (130 points)

DUE: 11:59 PM, 6 January 2017
Submitted to YouTube: UNO IT Innovation Channel

Each student team creates a 3-minute video demonstrating all aspects of their medium-fidelity prototype. The video should communicate the purpose, background, and status of the project. Since the in-person presentations of the medium-fidelity prototypes only provide a high-level overview of the innovation, this video should include an in-depth discussion *all major features* that you plan in implement in your innovative idea. Points will be based on quality of the prototype, quality of the video, thoroughness of the prototype, and the extent to which your prototyped idea addresses the problem statement.

The videos must not be offensive or vulgar in any way. There will be zero tolerance for demeaning remarks or pejorative labeling in this competition. Videos that would not be allowed on network television will receive zero points.

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Description</th>
<th>Possible Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>Purpose and scope</td>
<td>The idea is described in a clear and coherent manner The scope of the prototype is clearly defined</td>
<td>25</td>
</tr>
<tr>
<td>Thoroughness of Prototype</td>
<td>All features to be included in the idea have been prototyped to the best ability of the technology and prototyping platform</td>
<td>45</td>
</tr>
<tr>
<td>Quality of Prototype</td>
<td>The prototype is polished and communicates the intended function well. Minimal placeholders and dummy text are used. Color scheme and platform-specific usability guidelines are followed.</td>
<td>45</td>
</tr>
<tr>
<td>Production Quality</td>
<td>The video is well-produced and well-edited</td>
<td>15</td>
</tr>
</tbody>
</table>
This milestone evaluates the teams’ ability to document and describe the back-end functionality of their innovation in a professional written report. Each team should submit a 2 to 3 page, single spaced, 12 pt font, report describing the all development efforts to complete the back-end computing ability of the innovation, along with attached appendices.

The report should include the following sections:

1. Introduction describing the problem being addressed, the purpose of the innovation, and a summary of all ideation and prototyping activities to date.
2. A break-down of the development tasks required to complete a working prototype of the innovation. Group the development tasks into categories, and describe the platforms, languages, and approaches you plan on using to complete these tasks.
3. A discussion of the potential challenges that you see your team facing in completing these development tasks. Include any reflection on skills needed, required resources, or further research that will help move this project along.
4. A project time-line (Gantt Chart style) of the remaining development tasks, detailing team members responsible for tasks, time to completion, and major project milestones.
5. Appendices documenting the code you have used (pseudo-code can be used for brevity), modeling results, testing results, and pictures of any hardware you plan on using in your innovation (if there is a hardware component).

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Description</th>
<th>Possible Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>Introduction</td>
<td>Clear, succinct description of the innovation</td>
<td>15</td>
</tr>
<tr>
<td></td>
<td>Summary of ideation and prototyping activities</td>
<td></td>
</tr>
<tr>
<td>Development Tasks</td>
<td>Clear and logical development tasks are described</td>
<td>25</td>
</tr>
<tr>
<td></td>
<td>Tasks are appropriate and relevant to project</td>
<td></td>
</tr>
<tr>
<td>Challenges</td>
<td>Identifies real challenges that may be encountered</td>
<td>30</td>
</tr>
<tr>
<td>Time-line</td>
<td>A time-line is provided with development tasks and assigned team-members.</td>
<td>10</td>
</tr>
<tr>
<td>Appendices</td>
<td>Appendices are easy to read and complete.</td>
<td>25</td>
</tr>
<tr>
<td></td>
<td>Provided materials help communicate the progress that the team has made to date.</td>
<td></td>
</tr>
<tr>
<td>Writing Style</td>
<td>Writing is professional and error-free</td>
<td>15</td>
</tr>
<tr>
<td></td>
<td>Formatting follows guidelines: uses 12pt font, 1 in margins, single spaced, and is between 2 to 3 pages in length.</td>
<td></td>
</tr>
</tbody>
</table>
Back-end Development Presentation Guidelines (150 Points)

DUE: 5:00 PM, 9 March 2018
Submitted via email to: unoinnovationcup@gmail.com
Presented at a networking event at PKI

This milestone evaluates the teams’ ability to present the back-end functionality of their innovation in a professional manner. Each team’s presentation must be at least 7 minutes and no more than 10 minutes. The presentation should:
1. Briefly and crisply describe the innovation
2. Clearly identify the need that solution satisfies
3. Explain the basics of the innovation functionality
4. Discuss development efforts including approaches, platforms, languages, and techniques used in development.
5. Provide screenshots, story boards, or rudimentary examples that demonstrate technical progress is being made

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Description</th>
<th>Possible Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>Innovation Description</td>
<td>Good presentation introduction&lt;br&gt;Clear, succinct description of the innovation</td>
<td>20</td>
</tr>
<tr>
<td>Need</td>
<td>The need is relevant, real, and well-thought out&lt;br&gt;Segmentation is realistic (i.e., who is the product for?)</td>
<td>25</td>
</tr>
<tr>
<td>Solution Functionality</td>
<td>Functionality is clear&lt;br&gt;Ties from the innovation to the needs are strong, and evident</td>
<td>40</td>
</tr>
<tr>
<td>Time Control</td>
<td>Over 7 minutes (show sufficient content)&lt;br&gt;Under 10 minutes (shows control over presentation flow and time constraints)</td>
<td>10</td>
</tr>
<tr>
<td>Development Progress</td>
<td>Evidence of technical progress is presented&lt;br&gt;Development efforts are solid and a clear path to completion is presented</td>
<td>35</td>
</tr>
<tr>
<td>Presentation Quality</td>
<td>Slides are neat, orderly&lt;br&gt;Good eye contact with audience around the room&lt;br&gt;Clear voice, loud enough to hear in the back row&lt;br&gt;Display of enthusiasm and appropriate gesturing</td>
<td>20</td>
</tr>
</tbody>
</table>
Integration and Refinement Presentation Guidelines (200 Points)

DUE: 5:00 PM, 9 March 2018
Submitted via email to: unoinnovationcup@gmail.com
Presented at PKI

This milestone evaluates the teams’ ability to present their innovation and idea in a professional manner. Each team’s presentation must be at least 7 minutes and no more than 12 minutes. The presentation should:

1. Briefly and crisply describe the computer-augmented decision making solution
2. Clearly identify the need that the aid solves (e.g., social, educational needs)
3. Explain the functionality of the innovation
4. Discuss development efforts focusing on process of integrating medium-fidelity prototype with back-end development efforts.
5. Show a full and completed solution and what it does

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Description</th>
<th>Possible Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>Innovation Description</td>
<td>Good presentation introduction</td>
<td>20</td>
</tr>
<tr>
<td></td>
<td>Clear, succinct description of the idea</td>
<td></td>
</tr>
<tr>
<td>Need</td>
<td>The need is relevant, real, and well-thought out</td>
<td>40</td>
</tr>
<tr>
<td></td>
<td>Segmentation is realistic (i.e., who is the product for?)</td>
<td></td>
</tr>
<tr>
<td>Functionality</td>
<td>Functionality is clear</td>
<td>40</td>
</tr>
<tr>
<td></td>
<td>Ties from the aid to the needs are strong, and evident</td>
<td></td>
</tr>
<tr>
<td>Time Control</td>
<td>Over 7 minutes (show sufficient content)</td>
<td>20</td>
</tr>
<tr>
<td></td>
<td>Under 15 minutes (shows control over presentation flow and time constraints)</td>
<td></td>
</tr>
<tr>
<td>Completion and Integration</td>
<td>Innovation is complete, in terms of form (medium-fidelity prototype), function (back-end development), integration (form and function are seamless), and provides value to target market</td>
<td>60</td>
</tr>
<tr>
<td>Presentation Quality</td>
<td>Slides are neat, orderly</td>
<td>20</td>
</tr>
<tr>
<td></td>
<td>Good eye contact with audience around the room</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Clear voice, loud enough to hear in the back row</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Display of enthusiasm and appropriate gesturing</td>
<td></td>
</tr>
</tbody>
</table>
Final Demonstration of Refined Prototype (200 Points)

DUE: 5:00 PM, 18 April 2018
Demonstrated at a final event at Scott Conference Center

Each team will demonstrate their refined solution to a panel of judges and show how it works and how it solves a need. Each of the judges will subjectively evaluate the solution and award a point total from 0 to 200 points. The average of the judges’ scores will be calculated for each team and the resulting number will be the resulting score. Sample criteria include visual appeal of the innovation, error-free demonstration, quality of the implementation, functionality, etc.
People Choice Award Public Votes (NO Points)

DUE: 5:00 PM, 18 April 2018
Votes at final event at Scott Conference Center

All of the attendees at the final presentation and demonstration conference will be given the opportunity vote on which innovation they like the best. UNO students, faculty, and community members will also be allowed to vote. Votes will be cast using a mobile application.

Credits will be awarded in the following fashion. Each first place vote receives 10 credits, each second place vote receives 7 credits, and each third place vote receives 5 credits.

The team with the most credits will be the “People’s Choice Winner” and receive the $500 prize.