CUNY-IBM Watson Case Competition 2018

Team Number: 51

Team Name: Minimizing R. I.

Business Case Title: Reducing Recidivism

Link to the 1-minute (Youtube / Vimeo link): https://youtu.be/UcTNwXJ8xTM

Sector (Higher Education, or City Services): City Services

One-line about your project (Give us your best one-sentence pitch): Improving release program accessibility by automating the process and making it personalized to the individual.

Team Members: Carlos Bibiloni, Sohail Anwar, Christian Collazo

NEW YORK STATE | Corrections and Community Supervision

Reducing Recidivism

I. OVERVIEW

The NYS Department of Corrections and Community Supervision (DOCCS) releases approximately 24,000 inmates annually. Despite the number of releases, the department has reported an average population of ~55,000 over the past 5 years. The high prison population is directly related to the recidivism rate- approximately 43% of the released convicts end up back in prison. Numerous studies have determined that education provides true reform; recidivism rates were reduced by 40% in the study groups that were educated. Put another way, NYS can see a 17% rate rather than a 43% rate of recidivism via education. We have focused on how technology can enable prerelease education in the months just before a prisoner is released. Our thesis is that this is a key period during a prisoner's sentence that provides ample opportunity for improvement with cognitive technology. If improved, we are confident that we can reduce recidivism both in New York City and New York State.

II. CASE STUDY

When a convict is to be released, they are aware of it for some time. They can request access to information in the forms of large tomes of materials regarding the programs available to them to guide and keep them on a path towards a life of self-sufficiency. Prison life is stressful, counselors are overwhelmed and few inmates will have the education, gumption and wherewithal to go through the books and select the programs that they qualify for (based on the time served and the nature of their crime) and then further evaluate which programs they would prefer (e.g., would they select a program requiring them to stay at a halfway house and leave only for work for 18 months or a program that lasts 9 months with no interaction with the outside world). Most prisoners are uneducated- they lack the motivation to spend their time and efforts on researching and selecting an appropriate (for them) rehabilitation program. Some inmates can find the solution that is right for them- consider our very own team leader, Carlos. He describes that his success is the exception, not the norm. After all, 43% of the inmates are returning to prison. It is a tough process with obstacles every step of the way; people like Carlos make it only through sheer force of will and a strong motivation. As Carlos has identified this release process as key to his success, we asked ourselves, how we can target it and provide the same opportunity to all the inmates who may not have the drive, technical knowledge, or abilities as Carlos but still deserve a fair opportunity at a stable life after prison.

III. PROPOSED TARGETED SOLUTION

Our IBM Artificial Intelligence based solution, Watson Release on Recognizance (RoR) would provide an efficient, interactive experience (with Watson Assistant) to guide the prisoners on the options at this critical juncture. This interface would provide personalization by integrating with existing prison management systems and be based on data detailing the rehabilitation programs available to all inmates, powered by Watson Discovery. The prisoner would be able to request information regarding their options and the system would provide a list of the best options in ranked order (Watson Conversation). An inmate will be advised of all the programs available to them, to the level of the most minute details if they should request them. Should the inmate ask about job prospects, one of the personalization aspects of the system would come into play. Consider a hypothetical inmate being released after serving their sentence for child abuse, and asking if they could become a teacher or tutor. Watson RoR would be able to delve into their records, see that their offense would preclude them from this type of work, and subtly inform the inmate that this option is not viable, offering instead a host of more likely options based on their history.

IV. WORKFLOW

Watson RoR is designed to integrate closely with existing prison management systems. Figure 1 visually depicts the system workflow. The Inmates would be allotted a certain amount of time when they begin nearing their release to interact with the system. After the Watson Visual Recognition component verifies the prisoner's identity with their demographics, it would ready their case file in the Watson system, as well as open the Watson voice assistant for interaction. The assistant is powered by Watson Conversation- a powerful API that can integrate with Speech-to-Text and Text-to-Speech capabilities. After receiving a question from the prisoner, the system would send the question to Watson Discovery. Note that during the implementation of the system, Watson Discovery would have been prepared for instantaneous responses by indexing and shifting through the massive amount of materials available regarding the numerous inmate reform and transition programs available, as well as the main convict tracking databases used by the Corrections Department. Watson assistant would take the information provided by Watson Discovery, and provide it to the prisoner via Text-to-Speech.

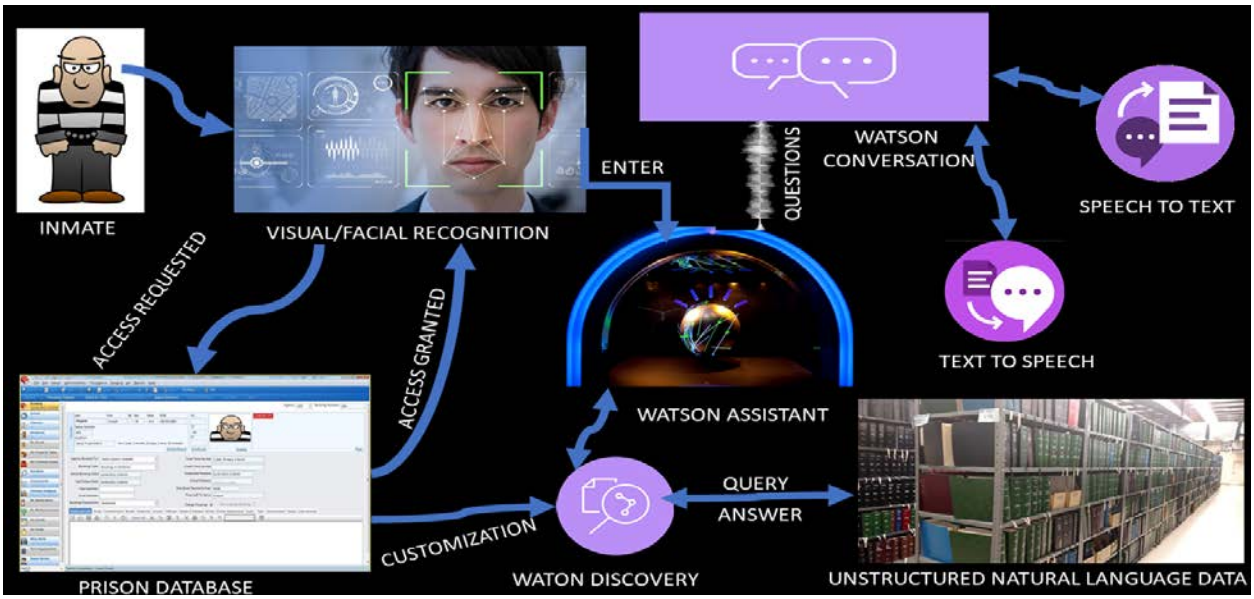

Figure 1- A visual workflow of how the Watson RoR system would provide critical educational services and personalized advice.

If an exact response is not possible, heuristic methods would be employed to provide suitable alternative answers. Because of the prison environment and the type of personalities that are incarcerated, some individuals may have violent tendencies or anger management issues. Here is where Watson tone analyzer, again integrated with the Watson Conversation API, would be very useful. If a prisoner started to become frustrated with the answers they were receiving, or if they felt that the system was not functioning properly, then Watson RoR would be able to sense that they are upset and turn off or alter its behavior in a way that helps mitigate the risk of damage to the system or another negative outcome.

Because prisoners in general are known to have criminal tendencies, and could view the Watson RoR system as an opportunity for criminal mischief, strict safeguards would be implemented; as much as the Internet and general computer access are restricted and controlled to prevent unauthorized communication with the outside world- a situation used by some to run criminal enterprises from inside of jail as they would have from the outside. The safety mechanisms in our RoR system would only allow the prisoners to obtain information relevant to their specific release needs, without the need for active policing- Watson would police itself. Watson RoR as envisioned has high potential to reduce recidivism

by providing inmates with a convenient, intuitive, and user-friendly interface with AI-enhancements reducing the work that needs to be done. Rather than thinking about what programs are available to them, prisoners using Watson RoR would be freed to think of how to comply for success with their informed choice of rehabilitation.

V. COST-BENEFIT ANALYSIS

A natural trend toward rehabilitation because of the benefits of Watson RoR would reduce the prison population, and therefore generate significant cost savings. Watson RoR can easily be scaled from NYC Corrections to the New York State DOCCS; we therefore examine the numbers at a state level. The NYS prison systems budget is ~$3.3 billion, and the prison population is ~50,000. This means that each prisoner costs ~$66,000 to the NYS taxpayer. A 43% recidivism rate means that ~21,500 inmates are cycling through prison, at a cost of ~$1.29 billion dollars. A conservative estimate of the minimum benefit of Watson RoR would be 3%- meaning a savings about $3.5 million annually. After accounting for the implementation costs of the Watson system, a bare minimum break-even point would be Year 5, after which the state would only save money, as depicted in Figure 2. A more balanced approach (Figure 3) estimates an annual savings of $10 million based on an 8% reduction in the recidivism rates, with the state breaking even on implementation a little earlier than 3 years, and saving potentially $55 million over the course of a decade.

Watson RoR is designed to address a small but critical part of prisons in America. Expanding its usage to other states and the federal level would only increase the savings. It can also scale to be used to address other educational issues prevalent in prisons, such as access to college. Watson RoR is fiscally responsible, has room to grow, and will motivate ex-convicts to be a productive part of society.

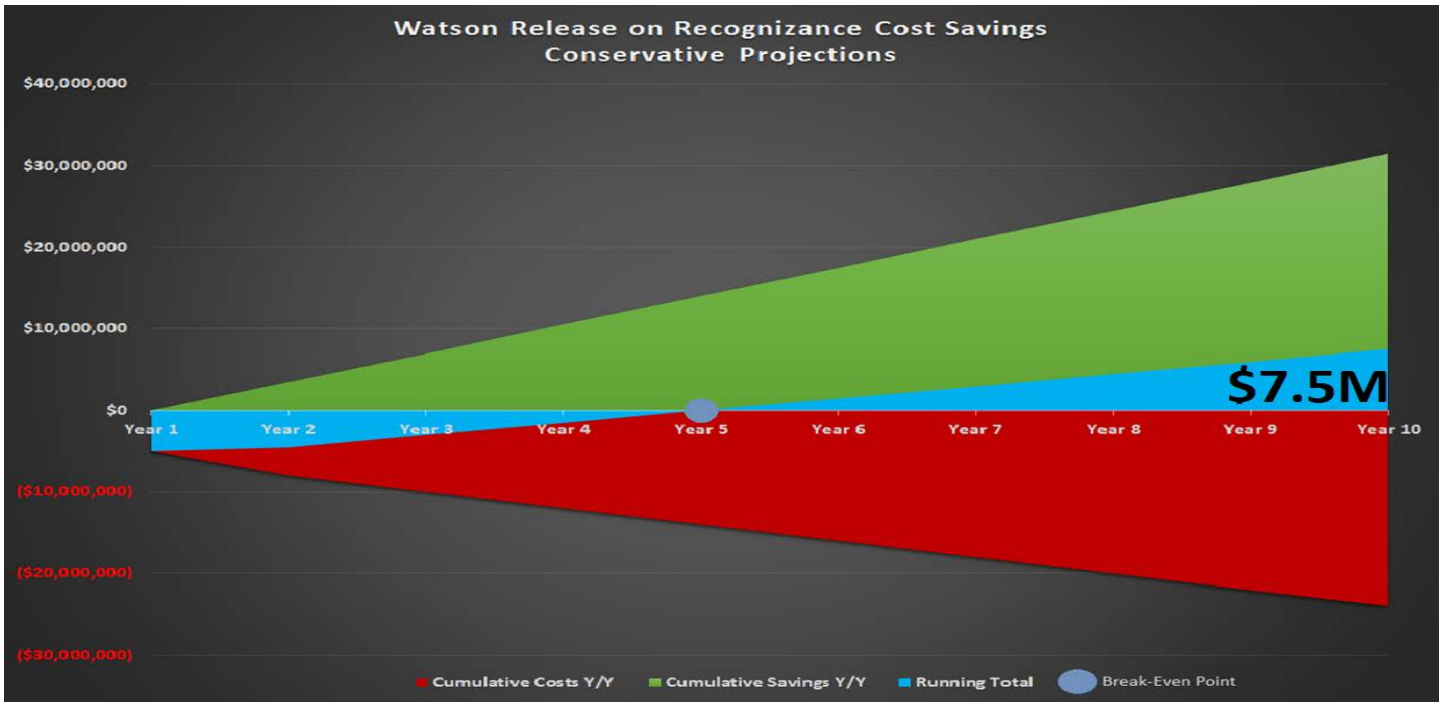

Figure 2- Conservative Savings Projection with a minimum of 3% reduction in recidivism

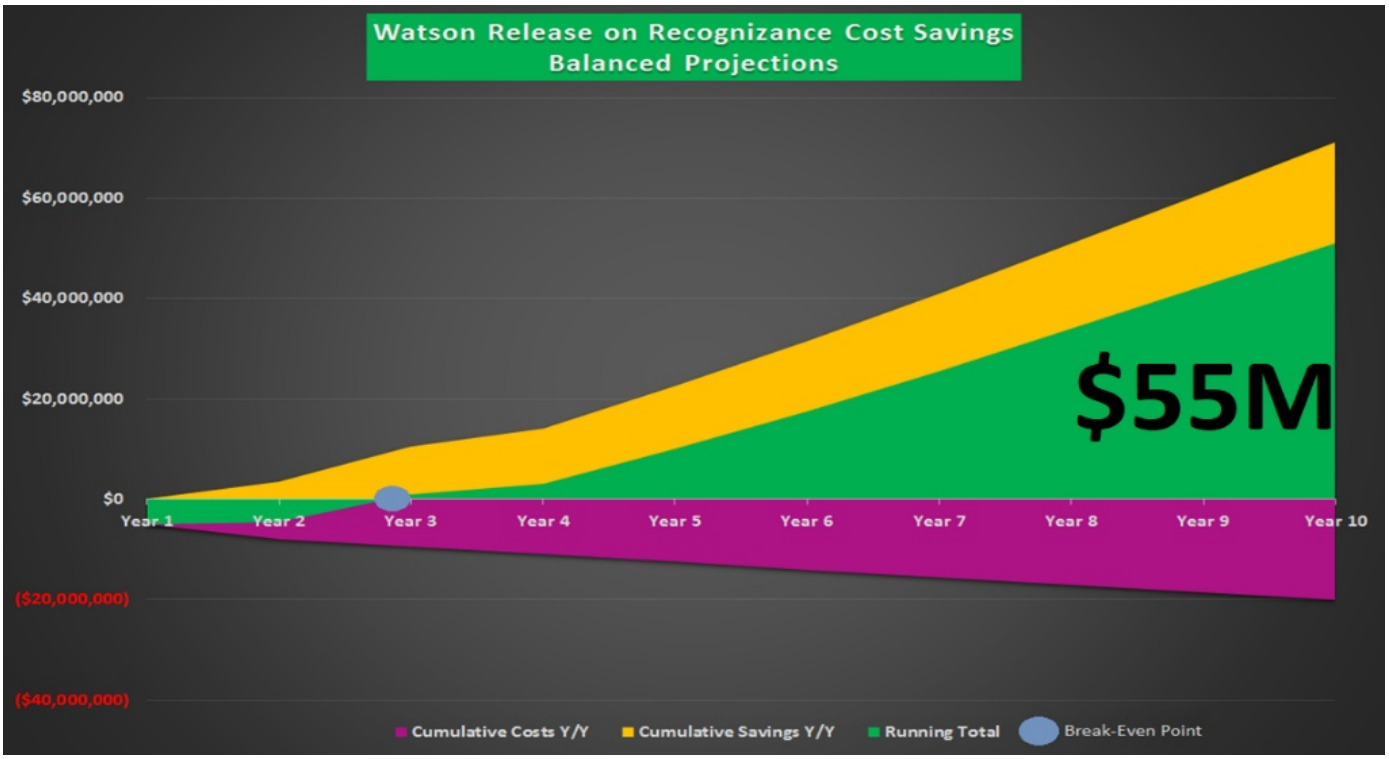

Figure 3- A Balanced Projection Chart of the costs and savings using an 8% reduction rate.

Works Cited

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