10.2 Exercise – Suicidal application using ML and AI  
  
The problem and the solution  
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**Abstract**

Suicide is a leading cause of death that defies prediction and challenges prevention efforts worldwide. Artificial intelligence (AI) and machine learning (ML) have emerged as a means of investigating large datasets to enhance risk detection. Machine learning analysis of social media data represents a promising way to capture longitudinal environmental influences contributing to individual risk for suicidal thoughts and behaviors (Roy et al., 2020). Their objective was to generate an algorithm termed "Suicide Artificial Intelligence Prediction Heuristic (SAIPH)" capable of predicting future risk to suicidal thought by analyzing publicly available Twitter, Youtube, Instagram data.

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The problem and the solution**

Suicide has been an intractable public health problem despite advances in the diagnosis and treatment of major mental disorders. A growing area is the development of suicide screening technologies through accessing and analyzing social media data. Previous studies have shown that youth are likely to disclose suicidal thoughts and suicidal risk factors online and on social media. Suicide is a complex but preventable public health problem that challenges prediction due to its transdiagnostic yet rare occurrence at the population-level. Beyond the inestimable costs at the individual, family, and community level, Suicide currently outnumbers homicide and motor vehicle accident collisions representing a public health emergency and resulting in an estimated cost of $93.5 billion to the U.S. economy (Bernert et al., 2020).

**How ML and AI is helping with Suicide**

This scenario, where an actionable diagnosis comes not from a doctor's evaluation or family member's concern, but an algorithm, is an imminent reality. Last year, data scientists at Vanderbilt University Medical Center in Nashville, Tennessee, created a machine-learning algorithm (paywall) that uses hospital-admissions data, including age, gender, zip code, medication, and diagnostic history, to predict the likelihood of any given individual taking their own life. In trials using data gathered from more than 5,000 patients who had been admitted to the hospital for either self-harm or suicide attempts, the algorithm was 84% accurate at predicting whether someone would attempt Suicide in the next week, and 80% accurate at predicting whether someone would attempt Suicide within the next two years (Goldhill).

**Ethical Questions and Policy**

Incorporating guidance from experts in areas like data protection and privacy law, security, content policy, engineering, product management, and public policy. This process, which involves a number of different teams (for example, legal, policy, privacy program, security, communications, and marketing) addresses potential privacy and other legal issues. It is important to note that this process goes beyond the assessment of legal compliance requirements, looking also into policy, ethical and societal implications of our products and services, while ensuring that our product applications bring value to people on our platform.

**Suicide Screening Application**

Machine learning researchers in academia, government, and industry are all scrambling to adapt and apply modern artificial intelligence techniques – deep learning in particular – to the suicide problem. This app can be built for Doctors to recommend to their patients. This way, they can track their behavior or possible suicidal attempts. This app will use both ML and AI to measure the patient's action.

* Learn how to use the Suicide prevention app approach when working with patients.
* Explore interactive sample case studies and see Suicide prevention app in action through case scenarios and tips.
* Quickly access and share information, including crisis lines, fact sheets, educational opportunities, and treatment resources.
* Browse conversation starters that provide sample language and tips for talking with patients who may need suicide intervention.
* Locate treatment options, filter by type and distance, and share locations and resources to provide timely referrals for patients.

**Conclusion**

With this AI and ML tool, healthcare professionals could help mitigate suicide risk for homeless and other high-risk individuals. The goal is to protect as many youths as possible. Not only does our solution advance the field of computer science by addressing a computationally hard problem, but also it pushes the boundaries of social work and risk management science by bringing in computational methods into the design and deployment of prevention programs. This algorithm can help us find a subset of people in a social network that gives us the best chance that youth will be connected to someone who has been trained when dealing with resource constraints and other uncertainties (HealthITAnalytics, 2019).

**Reference:**

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(Goldhill)