**Business background**

CareHealthAI is a smart patient management system built to ease the pressure on South African healthcare facilities. Instead of forcing everyone to wait in the same long queues before receiving medical attention, the system uses patient symptoms and vital signs to sort people into clear categories such as critical, moderate, or normal. This means those in urgent need of care are seen first, while routine check-ups are guided to the right doctors without disturbing emergency cases. Behind the scenes, CareHealthAI runs on Python-based machine learning models, trained with both open medical datasets and simulated patient records. Looking ahead, the solution can be scaled to clinics and hospitals across the country, creating a fairer, faster, and more reliable way to manage patient care.

**Problem definition**

Hospitals and clinics in many communities face the persistent challenge of long queues, which delay access to care, overwhelm healthcare staff and reduce overall patient satisfaction. Patients with minor illnesses often wait the same amount of time as those with serious conditions, leading to overcrowding and misallocation of resources. This inefficiency is partly due to the lack of effective triage and prediction tools that can quickly identify high-risk patients who need urgent attention. In the hospitals, people have to wait for the files, which takes time before they get medical attention.

By applying AI to patient intake and clinical data, hospitals can automatically predict which patients are at higher risk of complications or deterioration. This allows healthcare staff to prioritise urgent cases, streamline resource allocation, and reduce unnecessary waiting times. For the local municipality, the benefits are significant: improved community health outcomes, better use of limited medical staff and infrastructure, and reduced frustration among patients. This AI-driven solution ensures that vulnerable individuals receive timely care while maintaining smoother patient flow in hospitals and clinics.

**Business objectives**

The primary objective of the AI solution is to predict patient risk levels at the point of entry, enabling hospitals and clinics to triage more effectively, reduce waiting times, and optimise community healthcare delivery. Reduce long queues in hospitals and clinics by streamlining triage and ensuring that high-risk patients are attended to first, reducing preventable complications.

**AI Solution**

CareHealthAI utilises artificial intelligence to help hospitals and clinics manage patients more effectively. When a patient registers, the system gives them a unique QR code linked to their medical profile. Once scanned, the AI model checks their data (age, symptoms, vital signs, and medical history data) and predicts whether they are low, medium, or high risk.

The solution applies machine learning in healthcare, which is a part of the project theme *“AI Solution for Industries”.* The model is trained on medical datasets and simulated patient records, and its accuracy is tested to make sure results are reliable.

Doctors and nurses see the results on a dashboard: high-risk patients are flagged in red with alerts, while medium and low risk are displayed with corresponding indicators. This makes it easier to prioritise urgent cases, reduce waiting times and improve patient care in busy hospitals.

By combining AI risk prediction, QR-based patient identification, and a time dashboard, CareHealthAI provides a fair and efficient healthcare solution that can be deployed in hospitals and clinics across South Africa.

**Business Success Criteria**

Average waiting time reduced by at least **30%** after AI-assisted triage, and high-risk patients are prioritised correctly in more than **90% of cases**. Increased patient satisfaction scores and better staff efficiency measured through reduced overtime and balanced workloads.

**Requirements**

Access to patient intake data (age, vitals, symptoms, past history). Implementation of an AI risk prediction model in hospital systems. Training staff to use AI outputs in triage decisions. Secure storage and compliance with healthcare data protection laws (POPIA/GDPR).

**Constraints**

Limited availability of high-quality patient data. Resistance to change from healthcare staff. Infrastructure limitations in rural or underfunded clinics. Ethical concerns regarding bias and fairness in AI predictions.

**Risks**

Incorrect predictions may delay critical care if not monitored. Data privacy breaches could compromise patient trust. Over-reliance on AI may reduce human oversight in triage. The cost of implementation may be high for resource-limited hospitals.

Tools and Techniques

* PyCharm: for creating a chatbot
* SQL: for storing data
* PowerPoint: for presentation
* GitHub: for coding and collaboration