Masters Project

Initially 2D model

* Not very useful in the short term
* Simplistic

Moved to ML accelerator for SIF calculation in ICGT

* Useful in the short term
* Successful prediction of KI
* KII and KIII prove problematic due to their more subtle mechanics
* More data may change appraisal

Finally moved to estimator for binary measure of fracture interference

* Determine a heuristic index to encode fracture-fracture distance and relative orientation

Fracture Orientation and Distance Index (FODI)

Distance from tip to tip – positive definite scalar – easy to calculate and interpret

Fracture orientation – real valued scalar – hard to calculate and interpret

Lower distance 🡪 increased interference :: FODI inversely proportional to distance

Coplanar fractures 🡪 increased interference

Determine coplanarity 🡪 measure absolute fracture orientation w.r.t. boundary (theta)

Smaller theta 🡪 increased interference :: FODI inversely proportional to theta

Linearly opposed fractures 🡪 increase in SIF :: positively valued FODI

Stacked fractures 🡪 decrease in SIF :: negatively valued FODI

Measure of fracture alignment w.r.t boundary (phi)

