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(C) EUROfusion

TÉCNICO LISBOA

Nuclear fusion powers the Sun

Fusion: inertial confinement vs. magnetic confinement



JET: the Joint European Torus







Plasma diagnostics



Bolometer tomography at JET





Bolometer tomography at JET



Convolutional neural network for plasma tomography



D. R. Ferreira et al., "Full-pulse tomographic reconstruction with deep neural networks", Fusion Science and Technology, vol. 74, no. 1-2, pp. 47-56, 2018

Convolutional neural network for plasma tomography



Recurrent neural network for disruption prediction



D. R. Ferreira et al, "Deep learning for plasma tomography and disruption prediction from bolometer data", IEEE Transactions on Plasma Science, vol. 48, no. 1, pp. 36-45, 2020

Recurrent neural network for disruption prediction



Variational autoencoder for anomaly detection



Variational autoencoder for anomaly detection



- Data processing and surrogate models
- Disruption prediction and event characterization
- Systematic analysis and knowledge discovery
- Machine design and experiment control

