# Main classes

# Robot

- net\_input\_shape : static vector<int>- transformation matrix : Matrix4d
- focal\_length : double - height of human : double
- pixel height of human : double
- + detectHumans(Mat frame, Net net): vector<Rect>
- + loadNetwork(string model config, string model weights): Net
- + prepFrame(Mat frame) : Mat
- + getShape(): vector<int>
- + setTranformationMatrix(Matrix4d matrix) : void
- + getTransformationMatrix(): Matrix4d
- + transformToRobotFrame(vector<Rect> bbox\_coords) : vector<Rect>
- + calculateDepth(Rect bbox\_coords) : double
- + getFocalLength(): double
- + setFocalLength(double focal length) : double

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# HumanDetector

- confidence threshold : double
- nms threshold : double
- static int human detection label
- + detection(Net net, Mat& blob) : vector<Mat>
- + postProcess(Mat& frame, vector<Mat>& outs) : vector<Rect>
- + drawBoundingBoxes(double confidence, int left, int top, int right, int bottom,

Mat& frame, int human\_number) : int

- + getOutputsNames(const Net& net) : vector<string>
- + setConfidenceThreshold(double conf th): void
- + getConfidenceThreshold() : double
- + setNmsThreshold(double nms th): void
- + getNmsThreshold(): double

# Note:

Mat, Rect and Net are composite datatypes used from OpenCV packages.
Matrix4d is a composite datatype used fro Eigen 3 package.