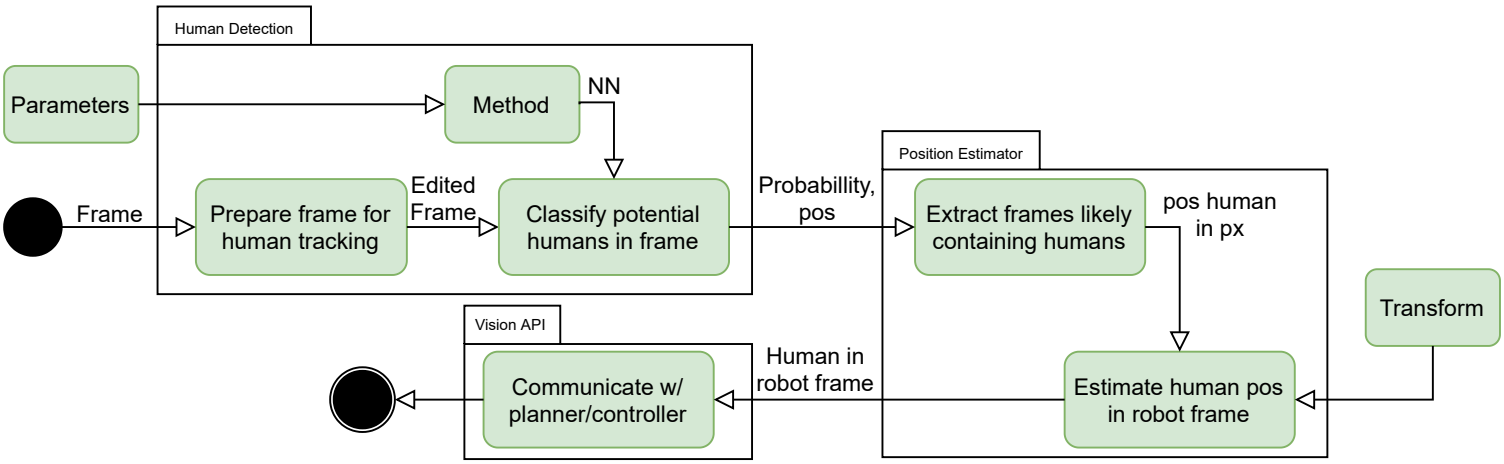
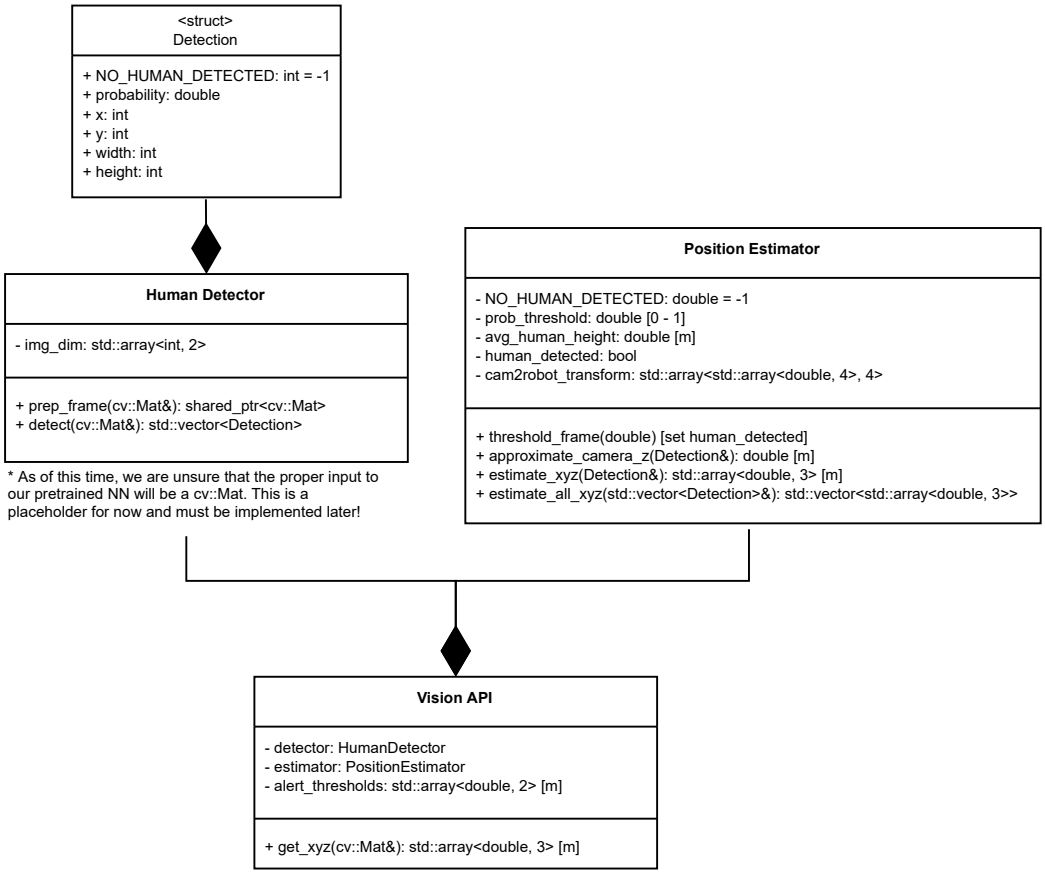

Human Detection
Parameters
Method
NN
Frame
Prepare frame for human tracking
Edited Frame
Classify potential humans in frame
Probabillity, pos
Position Estimator
Extract frames likely containing humans
pos human in px
Transform
Vision API
Communicate w/ planner/controller
Human in robot frame
Estimate human pos in robot frame


<struct>
Detection
+ NO_HUMAN_DETECTED: int = -1
+ probability: double
+ x: int
+ y: int
+ width: int
+ height: int
Human Detector
- img_dim: std::array<int, 2>
+ prep_frame(cv::Mat&): shared_ptr<cv::Mat>
+ detect(cv::Mat&): std::vector<Detection>
* As of this time, we are unsure that the proper input to our pretrained NN will be a cv::Mat. This is a placeholder for now and must be implemented later!
Position Estimator
- NO_HUMAN_DETECTED: double = -1
- prob_threshold: double [0 - 1]
- avg_human_height: double [m]
- human_detected: bool
- cam2robot_transform: std::array<std::array<double, 4>, 4>
+ threshold_frame(double) [set human_detected]
+ approximate_camera_z(Detection&): double [m]
+ estimate_xyz(Detection&): std::array<double, 3> [m]
+ estimate_all_xyz(std::vector<Detection>&): std::vector<std::array<double, 3>>
Vision API
- detector: HumanDetector
- estimator: PositionEstimator
- alert_thresholds: std::array<double, 2> [m]
+ get_xyz(cv::Mat&): std::array<double, 3> [m]