Activity Diagram VOLTA

main	bugPlanning	bugControl	SLAM	chargingPortDetector	

main:

● (start)

◇ → Yes → **import Training Data**

Train charging port detection model?

No ↓

get trained SVM model ← **train SVM model**

↓

initialize Gazebo workspace and map → **generate robot path to cover map** ← No

↓

pass path map to ros-master ← Yes ← ◇

has map been traversed completely

↓

initialize ros-master

↓ (fork bar)

chargingPortDetector (training):

import Training Data

↓

feature extraction

↓

train SVM model

---

bugControl:

generate Twist messages from path coordinates

↓

◇ → No

has entire map been traversed?

Yes → ● (end)

SLAM:

subscribe to camera/rgb/image_raw

↓

extract features from image

↓

convert image coordinates to world coordinates using Fundamental matrix

---

chargingPortDetector:

subscribe to camera/rgb/image_raw

↓

extract features from image frame

↓

get window in image containing sign

↓

run predict using SVM model previously trained

↓

◇

if image contains the signboard image → Yes

↓

get boundingBox coordinates for signboard → **convert points in bounding box from image coordinates to world coordinates using Fundamental matrix**

↓

set flag for these points in SLAM map object → **store coordinates of charging point as vector**