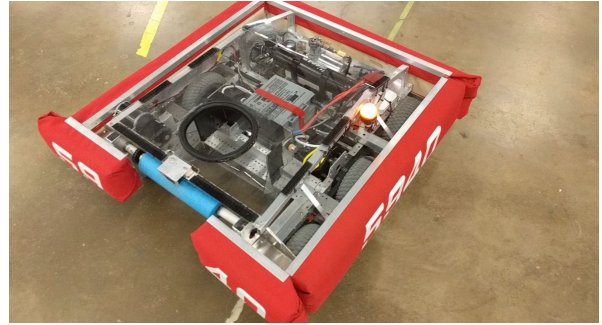


B.R.E.A.D. TEAM 5940

ROBOT - FOCACCIA

Rookie All-Star and Rank 15, 2016
Silicon Valley Regional

Curie Division, 2016 FIRST
Championship



Strategy

Our primary strategy is to assist those teams with a higher scoring rate by supplying boulders. By quickly shuttling them from the rest of the field to the enemy's courtyard, we maximize the scoring rate of our alliance as a whole. We are also no stranger to defense, having played it in several championship matches, and have a defensive blocker that can be swapped in and out in very little time. Our robot is versatile enough however to fill a variety of roles including breaching and low goal shooting.

Technical Specs

Drivetrain	<ul style="list-style-type: none">➤ 8" Pneumatic Wheels<ul style="list-style-type: none">○ 3 wheels per side○ Clears all non-articulating defenses from the neutral zone within 1.8 seconds.➤ Robust modified AM14U3 chassis<ul style="list-style-type: none">○ U-Channel upper frame allows easy modifications and attachment points for adding mechanisms on the fly➤ 4 CIM Drivetrain<ul style="list-style-type: none">○ Powered by Talon SRX ESCs connected through CAN○ VexPro 2 CIM Ball Shifters with 3rd Stage<ul style="list-style-type: none">■ One per side■ Low Gear<ul style="list-style-type: none">● Allows for defensive maneuvering including blocking and pushing. Robot does not go overcurrent in either gear.● Allows for precise maneuvering for ball manipulation (e.g. shooting, collecting, passing...). Static ball can be acquired from behind in 5 seconds.■ High Gear<ul style="list-style-type: none">● Allows for high speed field transversal. Field can be traversed from tower to tower in 8 seconds.
------------	--

Electronics and Pneumatics	<ul style="list-style-type: none"> ➤ Optical Sensor <ul style="list-style-type: none"> ○ Allows robot to recognize when ball is in manipulator ○ Enables roller stop and indication to driver ➤ Rotary Switch <ul style="list-style-type: none"> ○ 6 position rotary switch for autonomous program selection ➤ Onboard Pneumatics System <ul style="list-style-type: none"> ○ Compressor and 1 air tank onboard robot ○ One Festo 24V dual solenoid to control shifting cylinders
Ball Manipulation System	<ul style="list-style-type: none"> ➤ Powered by one MiniCIM coupled with a 4:1 VersaPlanetary gearbox from VexPro <ul style="list-style-type: none"> ○ One Talon SRX ESC connected with CAN ➤ Simple design <ul style="list-style-type: none"> ○ High reliability (no failures in testing) ○ Easy maintenance (replacement sub-assemblies at the ready) ○ Low profile (allows passing under the low bar) ○ Fast reaction times (no spin up time, minimal travel distance) ➤ Specialized ball passing mode <ul style="list-style-type: none"> ○ High speed and precision passing (ball fully exiting frame perimeter takes 0.75 seconds, ball exits at 1-2 ft/ s) ➤ Visual Aiming System <ul style="list-style-type: none"> ○ Frontal camera positioning provides clear view of field. ○ Visual overlays with ball indicator allow precise aiming without the need of reference points and speeds the process of confirming ball acquisition.
Driver Console	<ul style="list-style-type: none"> ➤ Controller <ul style="list-style-type: none"> ○ Short travel distance allows faster robot maneuvering. ○ Button positioning and quantity allows for quick use of programmatic features. ➤ Camera pole <ul style="list-style-type: none"> ○ Provides overhead view for better strategic decision making. ➤ Monitor <ul style="list-style-type: none"> ○ Provides better field visuals for drivers and coaches
Programming	<ul style="list-style-type: none"> ➤ Autonomous <ul style="list-style-type: none"> ○ Breach ○ Breach and release ball ○ Breach and return (Only possible with low bar) ○ Breach, release ball, and return (Only possible with low bar) ○ Do nothing ○ Modular <ul style="list-style-type: none"> ■ New autonomous programs can be

	<p>written on the fly. ~5min depending on complexity.</p> <ul style="list-style-type: none">➤ Testing Suite<ul style="list-style-type: none">○ Full robot and control system test can be performed within 20min○ Individual tests can be run
--	---