

IRI 2022 Guidebook

Scope

This is some helpful information to anyone attending the Indiana Robotics Invitational (IRI) in Columbus, Indiana in 2022.

Jack grew up in Columbus, Indiana and is sharing some of the points of interest available.

Team 4926, GalacTech (<https://frc-events.firstinspires.org/team/4926>), is also from Columbus, IN. Jack will reach out to his contacts on this team for some additional recommendations. Sam Gekler is the lead mentor.

"Let's go back to the old buildings of Oxford and Cambridge and in Germany or Italy. You have to say they were well built or no one would have tolerated them for three-, four-hundred years. They put out a message that the human race has been here a long time and that several generations have built way out into the future. If you build copies of them today, that says you have no creative ideas of your own. A real lesson from your ancestors, is to be as far-sighted and as big a risk taker in your day as they were in their day." -J Irwin Miller

Colorado Mentor Meetup, July 6, 2022

We can use some of the time in this meetup to talk about plans or IRI.

IRI Event

Details of the IRI Event, including a link to map and menu are available at <http://indianaroboticsinvitational.org/iri-2022/>.

IRI Schedule

This section has a summary of the event schedule. This is for planning purposes. The official schedule is at the official website.

- Friday, July 15, 2022
 - 10:00 am Field Setup
 - 10:00 am Team Load-In opens
 - 12:00 pm-3:00 pm What Robots Can Learn from Buildings (walking tour)
 - 5:00 pm Team Check In
 - 10:00 pm Venue Closes
- Saturday, July 16, 2022

- 7:00 am Volunteers Arrive
- 7:30 am Doors Open for Teams and Spectators
- 9:30 am Drivers Meeting
- 10:00 am Welcome Ceremony
- 10:15 am Matches begin
- 6:00 pm Matches End
- 10:00 pm Venue Closes
- Sunday, July 17, 2022
 - 7:00 am Volunteers Arrive
 - 7:30 am Doors Open for Teams and Spectators
 - 8:30 am Welcome and IRI awards
 - 9:15 am Matches Begin
 - ~12:00 pm Matches End
 - ~12:15 pm Alliance Selection
 - ~12:30 pm Lunch and Field Setup
 - ~1:30 pm Playoffs Begin
 - (Last Match + 1 hour) Venue Close

What Robots Can Learn from Buildings

By Jack Rumble

Growing up in Columbus, IN, I was inspired by the way that form and function support each other in original, elegant design. I think Columbus made me a better engineer. Most teams coming to IRI 2022 will never find a reason to return to Columbus, IN and I would hate for them to miss out on its uniquely inspirational designs.

The schedule is tight for IRI. Saturday and Sunday will be all robots, all day. After the intensity of competition, I know folks will just want to get on the road and get home.

I'm going to host an unofficial walking tour of Columbus, IN Architecture on Friday, July 15, 2022. We'll start at the Visitor's Center at 12:00 (noon) and finish at 3:00 pm. This should still give everyone plenty of time to gather with the rest of the team at East High School in time for the 5:00 pm Team Check-In.

Teams can get a better sense of what Columbus has to offer from the short videos available on the Visitors Center website (<https://columbus.in.us/architecture-videos/>). All are great. Here is a short list to start from:

- Visitors Center architecture video
- Fifth Street - the "Avenue of Architects" (core to my walking tour)
- The Miller House and Garden

(The Miller House and Garden video is included because it talks in more detail about the design process used and really highlights why Columbus is uniquely inspiring.)

From the Visitors Center, we'll see the county library designed by I M Pei, the North Christian Church designed by Eliel and Eero Saarinen. Then we'll walk to the Cummins Engine Company World Headquarters and step in to see their museum. From there we'll walk past the Post Office designed by Kevin Roche, back to see the former Irwin Union Bank designed by Eero Saarinen (now the Irwin Conference Center). Next it is down to The Commons where we'll marvel at Chaos by Jean Tinguely. After all this walking we will have worked up an appetite and will stop in Zaharakos Ice Cream Parlor for a treat and the opportunity to listen to the self-playing Welte Orchestrion. After this brief respite, we'll return to the Visitors Center.

Folks interested should wear comfortable shoes and weather-appropriate clothing. Bring a water bottle to stay hydrated. I expect it to be hot and humid as most July days are. Have a windbreaker or umbrella in the vehicle just in case. Team shirts or FIRST clothing is encouraged so we can share how great FIRST is with everyone we meet.

For everyone attending IRI, I recommend downloading the Columbus IN Tours app to their smartphone. Then download and watch some of the videos. For those interested in the tour, this will give them a better understanding of what we'll be seeing. The more they know when they arrive, the easier it will be to stand, stare, and soak in the amazingly subtle innovation that these places offer.

As an unofficial tour, I don't expect to get access to any of the buildings we'll be seeing beyond normal public access. We'll walk around the exteriors and talk about what we see and what we can learn from these examples for our own design processes.

If there are people interested in sticking around for a recovery day, I can offer the same unofficial tour on Monday.

Robot Supplies

This section has information on nearby robot supply options.

There is no Home Depot in Columbus, IN.

Lowe's

3500 Tenth Street, Columbus, IN

This is the closest big box hardware store. If you need parts, this is probably going to be your best option if another team can't help.

Harbor Freight

2614 Eastbrook Plaza, Columbus, IN

Rural King

2985 N National Road, Columbus, IN

This isn't a hardware store. It is a farm equipment store. It may have some interesting options for repairing robots as you need to.

Points of Interest

Cummins Corporate Headquarters Museum

<http://indianaplaces.blogspot.com/2011/07/cummins-corporate-headquarters-museum.html>

Columbus is the global headquarters for Cummins Engine Company. Cummins is the largest diesel engine company in the world. Their museum has a sculpture of a diesel engine in an exploded view so you can see each individual part that goes into the engine.

Chaos I

<https://columbus.in.us/chaos/>

Chaos I is a kinetic sculpture on display in The Commons. It is Jean Tinguely's largest sculpture in America. Definitely watch the video (<https://www.youtube.com/watch?v=T9u2HtKrAJ4>).

JackR used to spend hours gazing up at this sculpture as things spun and moved on it. It even includes a "marble run" of large balls the size of bowling balls.

Over the years, the city has had trouble maintaining all the mechanical parts of the sculpture. It may not all be active when you visit.

Mill Race Park

<https://columbus.in.us/see-do/mill-race-park/>

This city park, tucked between downtown and the White River, is worth a quick drive through, if not a picnic to let travel weary roboticists loose for some exercise.

While a great park in its own right, there are a couple reasons to make a point of driving through while in town for IRI. The first is that Mill Race Park has one of the few remaining wooden covered bridges that you can still drive through. This classic midwestern structure is not one found often on the trails of Colorado.

The second reason is a quiz from JackR. Prizes will be awarded when we all return to Colorado. As you're driving through, check out how the architects integrated the signage for the mens and womens restrooms into the structure.

Columbus Tours

<https://columbus.in.us/tour-options/>

Visitor Center videos are available on the website (<https://columbus.in.us/architecture-videos/>) so you can watch and prepare for what to expect when you arrive in mid-July.

There are only two seats available for the 10 am Architectural Tour on Friday, July 13.

There is a free Columbus, IN tours app. You can download it and it will provide guided walking tours.

One Small City, Seven National Historic Landmarks

- One small city – [seven national historic landmarks!](#)

Outlet Mall

There is an outlet mall in Edinburg, IN or Taylorsville, IN. They have an Under Armour outlet there. If folks get in early, they may want to wander around and see if they can find a deal on some items.

Irwin Conference Center

<https://www.youtube.com/watch?v=pYaatb7F9vM&t=25s>

“Always design a thing by considering in in the next larger context - a chair in a room, a room in a house, a house in an environment, and environment in a city plan.” -Eero Saarinen

You don't have to stop or go into the Irwin Conference Center. JackR does recommend watching the seven minute video about it; even if just to get the quote at the end from Eero Saarinen. Instead of building a better bank based on banks that had come before. J. Irwin Miller and Eero Saarinen started with the function of a bank. They detailed all the activity and operations that customers do in a bank and who they interact with. From that they designed a building that facilitated these interactions and customer experiences, down to the detail of the flooring material selected so factory workers and farmers would feel comfortable entering the bank in their work clothes.

Whether you're designing a bank, or a robot, or an app, or a term paper, the principle of starting with the purpose of a thing and working it in the context of the next larger thing will serve to make elegant, useful items.

Team Dinner Restaurants

This section has a list of restaurants in Columbus, IN that may work for a team meal.

Upland Brewery at the Pump House

<https://uplandbeer.com/columbus/>

Traditional American cuisine. In the old pump house next to the White River near the entrance to Columbus, IN. Great views of the river and downtown.

They wanted to charge teams \$700 for a large room in addition to meal costs.

Johnny Carinos

<https://www.carinos.com/locations/columbus/#/>

Nice Italian restaurant not too far from East High School.

Able to host large groups. We had some delays as our server tried to split up checks for the group. This ate into time for a Scouting Meeting on Saturday night.

Zaharakos Ice Cream

<https://www.zaharakos.com>

This is a restored old fashion ice cream parlor in downtown Columbus. It is across the street from the Commons where [Chaos I](#), a kinetic sculpture, is located.

One of the few restaurants in the country with a working Welte Orchestrion (<https://www.zaharakos.com/museum.html#instruments>). This self-playing organ runs on paper rolls, similar to a player piano, but with pipe organ, drums, and a triangle. While there, ask your server if they can play a little bit while you're there.

Call ahead because there is a back room that you may be able to reserve. It is also a good place to walk in to get an ice cream at the counter.

Zwangig's Pizza

<http://www.zwanzigz.com>

Great local pizza place. The restaurant is kind of small and it can get busy on the weekends.

You can always order a stack of pizzas for takeout (or delivery depending on where you're staying) and then take them somewhere else to eat them. If you're at a hotel, there may be room in the lobby or breakfast area for a pizza party.

Amazing Joe's Grill

<http://www.amazingjoes.com/columbus.html>

This may be a good option. They appear friendly to large groups. Jack's been there for lunch and enjoyed it.

It is pretty close to East High School.

Texas Roadhouse

2780 Merchant Mile, Columbus, IN 47201

This is a little farther outside of town. It is a national chain, so you know what you'll be getting here. It misses the adventure of finding a local treasure.

This is on the west side of town near I-65, exit 68. There are several hotels nearby, including the Holiday Inn. If your hotel is on State Road 46 or Jonathan Moore Pike, this is within walking distance.

Arni's

<https://meetyouatarnis.com/locations/columbus/>

This is an Indiana pizza place that has a full menu with salads, burgers, grinders, and more. It should be easier to get into and they advertise that they are open until 10 pm.

There was an Arni's in Frankfort, IN when JackR was in college. On the weekends he would skydive in Frankfort. They would jump until sunset and then head to dinner. While most places were closed, the Arni's was always open and they put up with the group of skydivers coming in and taking over their back room for a late meal.

Taku Japanese Steakhouse

<https://www.takusteakhouse.com>

Nice restaurant downtown where they cook the meal on the table in front of you.

Mancino's Pizza & Grinders

<https://www.mancinospizzagrinderscolumbus.com>

1301 N. National Road, Columbus, IN
This is a small local restaurant.

Luciana's Mexican Restaurant

<https://www.lucianasmexicanrestaurant.com/columbus/>

This Mexican restaurant is in downtown in the Commons with [Chaos I](#).

Columbus Bowling Center

<https://columbusbowlingcenter.com/snack-bar>

You know it isn't a restaurant, but East High School is right near the Columbus Bowling Center. They have a snack bar with typical grill items like hamburgers, cheeseburgers, and chicken tenders. This might be a fun thing to do after a day of robotics.

It could be a fun release for the kids as well. A bowling alley is not a place where you need to be worried about being rowdy or loud. This may serve as a clever place to do a scouting meeting. There is plenty of room to spread out.

Chicago's Pizza

<https://chicagospizza.com/locations/columbus/>

3780 West Jonathan Moore Pike, Columbus, IN

This is also a little farther. It is a good option for deep dish pizza. JackR still thinks Old Chicago has better deep dish pizza. It stays open late, so it may be available if you are struggling to get a reservation elsewhere.

Chili's

<https://www.chilis.com/locations/us/IN/Columbus/>

1079 N. National Road, Columbus, IN

This is close-ish to East High School. It is a national chain, so you know what you'll be getting. It misses the adventure of finding a local treasure.

El Toreo

10020 US-31 N

Mexican restaurant. Mom says not the one in the gas station.

Snappy Tomato's Pizza

This is one of the sponsors for IRI. Their restaurant is north of town near the Outlet Mall. If folks find themselves making a trip to the mall before the event, this is a good place to stop in and

grab a quick bite. You can even thank them for sponsoring the competition and grab a selfie for Instagram.

Max and Erma's

<https://www.maxandermas.com/edinburgh/>

My Mom and sister think Max and Erma's went out of business, but their website is still up. Call before planning to eat here.

Cracker Barrel

<https://www.crackerbarrel.com/#>

This is a chain restaurant specializing in southern cooking. It is set up for families and will be able to accommodate a large group. There aren't many in Colorado, so it may be a bit unusual for the team without being formal or too expensive.

Jack has found the service to sometimes be slow, which may work with a large group hyped up on robots. They often have those IQ puzzles on the table, which is a sign that you may be waiting a while before you see your server again and need something to pass the time. These were particularly helpful on family vacations in an era before smartphones.

Each Cracker Barrel also has a gift store that you have to wander through to get to your table and then again to pay your bill. This was another way for customers to not realize they spent an exorbitant amount of time waiting for their table. It may prove to be a simple way for students to find a kitschy gift for their parents when they return west after a weekend in the cornfields of Indiana.

Lunch Options

This section has information about fast restaurants near East High School. Teams can order online or call ahead orders and have someone pick up the food and return it to the venue.

Chipotle (Online)

There is a Chipotle on National Road, just a few minutes from the venue. Their app is easy to use and lets you specify who each item is for.

Jimmy John's (Online)

1675 N National R, Unit F

There is a Jimmy Johns on National Road, just a few minutes from the venue. Their app is easy to use. They are freakishly fast at making sandwiches. Order before leaving and then send someone to pick up the order.

Five Guys

Burgers fast food.

Sonic

Drive-in burgers, shakes, sundaes

Rally's

Drive through burgers.

McDonald's (Online)

This is well known national chain. The mobile app is a good way to prepare an order at the venue and send someone to pick it up.

McDonald's is best eaten hot. If it sits too long in the pits, it loses most of its appeal.

Lucabee Coffee Co

Closed on Sunday

<https://www.lucabecoffeeco.com>

Columbus, IN is known for its world-class architecture. This coffee shop now resides in one of these amazing architectural buildings.

They won't have a huge selection of food items. This is great for spectators and guests who may need a break from the event and an opportunity to unwind away from the crowds and the music.

Oh, this is the same parking lot as Harbor Freight Tools, so if you need to make a tool run, you can get a local cup of coffee as well.

Mancino's Pizza & Grinders

<https://www.mancinospizzagrinderscolumbus.com>

1301 N. National Road, Columbus, IN

This is a small local restaurant.

Captain D's

This is a fast food fish restaurant. Jack thinks it is local because he hasn't seen it as he's moved around the country.

White Castle

Burger fast food. Burgers are more slider size. White Castle invented putting holes in the patty so they could be cooked with a bun on top and the steam from the grill would cook both sides at the same time. They also mix chopped onion in the patty instead of stacking it on top afterwards.

Columbus Websites

This section has a list of websites about Columbus, IN. These are websites that Jack hasn't fully reviewed. This allows him to return to them after restarting his computer.

- <https://columbus.in.us/chaos/>
- <https://columbus.in.us/j-irwin-and-xenia/>
- <https://columbus.in.us/hometown-hero-clessie-cummins/>
- <https://columbus.in.us/sgt-must-see-sites/#>
- <https://columbus.in.us/harry-weese/>
- <https://columbus.in.us/pei-library/>
- <https://www.youtube.com/watch?v=o-Cg6qfytIA>
- <https://columbus.in.us/site-map/>

Jack's Dishwasher Help Videos

- <https://www.youtube.com/watch?v=dyYMn6rmJb8>

Random Notes

This section is transcribed notes from the 2022 IRI event. Once I get them captured, I'll start moving them into their appropriate documents and locations.

- Q1: 1987
- Looks like the AndyMark field. The rail is square, not round like the fields I'm used to.
 - The event field was the AndyMark field.
 - The practice field was the official field.
 - Tony was able to compare the two fields and capture notes to help with the development of the Robot Clubhouse in Colorado
- Q1: 1987
 - No auto
 - Swerve Drive

- Reliable Launch Pad Shooter
 - Turret with Limelight
 - Defense. Good pic at shooting moment
 - Attempted Mid Rung
- Field Entry and Exit
 - IRI was set up to enter opposite the Hangar and enter by the Hangar. This put Red Alliance flowing towards the Scoring Table and Blue Alliance flowing away from the Scoring Table.
 - Jack prefers flowing in the same direction.
 - Prepare Entry and Exit maps for each configuration as this is determined by the Lead Queuer at the time of the event.
- Driver Station light stack is not mounted. They are all at unusual angles
- 4499 has won all matches with 4 Ranking Points. Rankings haven't settled yet, but they are running strong.
- 1706 has a smooth snowblower robot. I watched them run a link of five Cargo shooting on the move
 - Look at their third and fourth matches of the event. I think it was one of those.
- 1706 is maintaining constant lock on the Upper Hub Vision targets. It is delaying shots to confirm lock. The turret is not full rotation. They have interrupter code when the turret needs to cycle around as it passes its rotation limit.
- 1706 driver is taking pauses to assist the shooter lock, when possible. If they are being chased, they will shoot on the move.
- This field is not using the Driver Light Stack to indicate pre-match connectivity. When there are delays, it is hard for spectators to get information about cause.
- CSA team is working to clear some fault and the Emcee is chatting. Todd in CO is so good at stepping in and keeping the crowd involved.
- Match 40:
 - 4499 held onto 4 RP and holding steady at Rank 2.
 - It was a close match.
 - Both Alliances had 2 transversal rung hangs
 - There ws a foul on 4499, but I couldn't tell what it was.
 - At one point 4499 allowed the pin to draw the foul. I don't know why they didn't shoot in that position.
 - Their new climber is working well nd quickly.
- Human Player
 - Only a few teams are using the Human Player as reconnaissance for Cargo on the far side of the field.
 - You have a human brain; use it.
- Match 41
 - Robonauts are drawing several fouls. I don't know why.
 - Their alliance caused 24 penalty points and lost by 1 point.
 - I wsa expecting 118 to perform better based on their reputation.
 - I haven't studied their season.
- Kickoff Game Analysis

- Look for Human Player on far side: Spy Behind the Lines
- Find something to do