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Attendees

Ayham Alharbat, Braden Wagstaff, Chinedu Amadi, enes avcu, Enrico Ferrera, Gerald Peklar, İshak Gönül, Kimberly McGuire, Miguel Fernandez, Ramon Roche, Ramon Roche's Presentation, Ryan Friedman, Ted O'Brien, Théotime Balaguer, Zia K

Transcript

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Ramon Roche: Hey everyone. Welcome to the Aerial Robotics work group for a meeting for May a 24-2023 joined by Kimberly. McGuire from Bitcoins. Hi Kim. And we have a bunch of roboticists interested in neural robotics today with us. Thank you. Everyone to join that. Join us early. Not early on time at 7, am at 7:05. Well actually seven. Oh six now. And we're ready to get started. So everyone excited for another meeting. I know I am. All right, so for the agenda today we got an introduction topic. So we're gonna talk about tutorials and education. This is something that we decided in the last meeting, we had a quick call and I think we should discuss this and we have a, We need to drop the plan for this afterwards, we have discussions. And how do you get started nails robotics is something that Kim's Kickstarted kicked off on the forums

Ramon Roche: There's also another question, What was missing and what is still missing any good examples or experiences from other robotic platforms in any other questions that you might have. And then towards the end, We're Enrico conclusion point, where we're gonna discuss the next scientific meeting where we will discuss. Also, How do you propose Maybe if you want to jump into the next meeting? And then any announcements that we might get and with that out of the way, let's just get started with the introduction topics, so tutorials and education. There's no standard robotics roster tutorial, Has anyone seen any aerial robotics, Ross, tutorials, any official or standard? Tutorial doesn't need to be Px4 or Ardu pilot has just draw some general.

Ryan Friedman: Not not in general. Now there's nothing on the Rosteria website for Ariel so it's all ground-based

Ramon Roche: Yeah.

Ramon Roche: All right. The do we have a Samsung White that is

Ramon Roche: I got a. I have an idea but I don't know exactly.

Gerald Peklar: Just guessing I think because today 2D navigation. Capability at the moment.

Ryan Friedman: yeah, well also like about I think it's a teleop like that the tutorials are for Turtle Bot.

Ramon Roche: yes, that was my guess to

Gerald Peklar: Yes.

Ryan Friedman: Like the first tutorials are using turtlebot and you control that with four arrow keys. and the controls for, Aerial platform are not as intuitive.

Ramon Roche: Hmm. Yeah.

Gerald Peklar: Oh yeah.

Ryan Friedman: I waste of your digitalia.

Gerald Peklar: It's literally About it was.

Ramon Roche: Forgot to post the link to the meeting. I just put that on the chat.

Gerald Peklar: Okay, I'm just gonna open the file.

Ramon Roche: If you want to follow through,

Kimberly McGuire: Yeah, Gerald. There's a bit of a background checker. Oh yeah, yeah, I think yourself. Thanks.

Ramon Roche: yes, it's Gerald's. The do we think we need like a if we had a debt kit for our robotics with that help or a few Devkin. So it will And then that's one because maybe portal blood is one of the answers why the thrills are program robotics. But what if there was like a turtle white arrow with wings? Would that help or would that mean? would still mean, still mean that we still start with to the navigation and we have to make the jump to 3D navigation with everything that me that is involved. In the learning curve, going from to the two 3D.

Ramon Roche: Yes, go ahead.

Ayham Alharbat: Yeah. So I think can you hear me first of

Ramon Roche: A little bit low.

Ayham Alharbat: Okay. Fernandez. Moving. Okay, I'll also speak a bit louder. So, is it now with better? Yeah, so I think one of them main problems that I saw with my students,...

Ramon Roche: It is a much better. Thank you.

Ayham Alharbat: if you talk about academic students, The problem is that with aerial vehicles. Alien robots, you there isn't a standard stack of controllers. Estimators, like something that is all in one that you actually can put together quickly, just like, in Ross. Or in those, I think this is already the case.

Ayham Alharbat: For ground vehicles. Manipulators. There is something that they can put together and then they see something working and then they can dig deeper into How is this working and they can learn rocks with those robots. So I think in aerial vehicles area robots There isn't this kind of full stack that is very popular. That is also supported by rocks. So it is like Cross-based Inside of Roche's organization. I know that there is a Kim already put together in discord. There was a question about what what stacks are they and we saw the air of that presentation for example. So I know that there is something going on

in peaks. For of course there is also A lot of tutorials antiques for about how to do it with Px4 settle software in the loop simulations. But I think we will.

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Ayham Alharbat: There isn't Ross supported full stack of that students and newcomers can get can put together and they can start working with. I think this is the main problem, in my opinion.

Ramon Roche: just go ahead, Gerald

Gerald Peklar: And he's going. Okay. Another problem we have seen, or I have seen, since we have started connecting rods, to flight control, that's, there is no clear. Documentation, which messages are really needed to control the vehicle. Especially in Px4, it's a software is changing that fast. There is no standard and Also, that you have to enable. All or compile in all your messages first on both sides. It's not very. handy for for development, it would be nice to have

Gerald Peklar: things defined as a standard that that are needed for controlling a vehicle and they are there by default. So that you simply take your companion, computer running Linux putting Rawson tap connecting that to a flight control. There you go. That's not there. It's it's a lot of investigation and a lot of tweaking until you are there. That I think the the entry is too high at the moment to let people start. So the entry level That's that's my feeling. That's what I've seen.

Gerald Peklar: With our students working here. It was a lot of investigation that had to be done to get Ross, working with Px4. And it was always a custom solution. Yeah. So you cannot take it one development and use it for some something else. Because There were other requirements. So, As I am stated standardization.

Ramon Roche: See.

Ramon Roche: Thank you. Gerald does really helpful back. Does anyone else want to share?

Ramon Roche: So far, we've touched on the need first and the recession on the interfaces to control. An aerial robot to Ross. Also, the need for developer kids. That are as accessible as the total. What? Hmm. Teal. Do you want to speak up as well?

Ramon Roche: We can't hear you, sorry.

Ramon Roche: Oops.

Kimberly McGuire: He left the meeting perhaps.

Ramon Roche: Yeah, browser problems.

Kimberly McGuire: He hasn't brought. Nothing.

Ramon Roche: Yeah, anyone else. Um and I am, you mentioned academic students that robotics you have a standard stack. Yeah, standardization as well. Deal.

Théotime Balaguer: I'm sorry. Can you hear me now? Noise. I'm sorry for that.

Ramon Roche: Yes.

Kimberly McGuire: Yes.

Théotime Balaguer: So just a quick question, do you think the orsf with the agree to like back one project among many? To say it's the project that we back as the Ross developers and and that everyone should start by, by using this, this kind of controllers, this kind of autopilot in etc, Would say would they agree? Or is it something politically incorrect?

Ramon Roche: Can't speak for them. I would say that if I were in their shoes I wouldn't just back one special when you have an ecosystem of a lot of different packages already brewing. I would however do push them to build the interfaces and standard standardized as much as possible within them. So that the experience for the developers doesn't isn't that wild from one project to the other. But part of why we're doing this landscape or this work group is because we want to inform them of what's available and what's needed from the ecosystem. So if we bring them that information, I think they would be eager to make a decision on that.

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Théotime Balaguer: yeah, because I don't have the history behind the turtle boats, but is it something say developed or is it something they adapted and said That's that's what will be the starting point for everyone. Starting with Ross,

Ramon Roche: That's a good question. I have no answer for you.

Théotime Balaguer: I don't know. Yeah.

Ramon Roche: Yeah. But I don't think that having more Kids would be a problem. Yeah. Oh,...

Kimberly McGuire: I started on the next page, by the way, Ramon, it's getting rid.

Ramon Roche: thank you.

Kimberly McGuire: Unless there's no no more comments than I have. I can delete this one.

Ramon Roche: Anyone else have any comments?

Ramon Roche: all right, and then yeah our folks still using Ross one or we jumping to Cross to our. Already.

Gerald Peklar: Response. Don't rush to estimate to go for us.

Ayham Alharbat: I mean, I'm still I'm still there are some projects within our research group that we're still using gross. But the main reason is That.

Ramon Roche: Right.

Ayham Alharbat: Ongoing projects, it will be a bit. Too much to move towards to at this moment. But of course, Roscoe is the way to go. And to be more a little bit. Also the context is that we are mostly using Ross with the mavross modeling and px4. So this is the tool chain. and now we are using we're moving to those two plus peaks for

Théotime Balaguer: It's the same as my laboratory exactly the same.

Gerald Peklar: Okay, then I like to have added for us, Ross, too with Px4 and fast DDS. so we don't use muff link or maferals, we use fastidious messaging And moving towards Sino.

Gerald Peklar: so running Pico say no on the flight control, that's something we will look into next to get because they know included in Px4 And then use say no. Send o h again.

Kimberly McGuire: I know which one you mean. I'll correct this lady. Yeah, or...

Gerald Peklar: Okay.

Kimberly McGuire: I will correct. This in the meantime just a question about, you know, that's instead of fast Eds Okay.

Gerald Peklar: Yes.

Kimberly McGuire: Yeah. Just just to make sure that I understand it.

Gerald Peklar: yeah, to be honest, with a little bit over my understanding,

Ryan Friedman: I from the artery pilot side since we added Ross two support. We've had a bunch of researchers asking about it but I think that they're all very excited that it's there and know that they want to like the research labs, want to move to Ross too. But for for people in the middle of their thesis or for PhD students, it's completely unfeasible to migrate Ross versions in the middle of your work.

Ramon Roche: Mean.

Ryan Friedman: So I think that there's going to be You know, the researchers are pleading edge in terms of the algorithms that they're developing, but the frameworks that they're using is really hard to transition, and you don't want to necessarily have half the lab, and Ross, one and the, the two PhD students that are the fourth year, first those still on rust one and then everyone else and rust too because it splits the, the experience of the lab. So I think there's, there's definitely some challenges from the, from the research groups that that have a limited amount of time and they're not trying to develop a software product. They're trying to make research, right? So they have different goals but I think like commercially their environment where we're falling on Ross, too. And we have the funding to do the migration in time.

Kimberly McGuire: I might also have a slight comments here, like, of course, like, open robotics is as like, if you're just starting out of rules, just doesn't matter. If it's an area of vehicle or a ground variable, they say, you should start with those two. Which makes absolute sense if you're if you, if you haven't even started a project or you're not building up on a product that already exists I guess what maybe is also kind of the issue because those two verse 1 has been around for so long, there are way more types of tutorials and even slight aerial robotic tutorials. That are all made for was one now.

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Kimberly McGuire: I guess we have to do some kind of research. I found why one website. Well that was called For aerial robotics that actually had some Ross one tutorials, but this person stops halfway which is a bit too bad. um, but yeah, I wonder like, you know, Easter, any rose one tutorials from aerial politics, that's maybe should be Yeah, transferred, I guess. I don't know. Like I tried Hector Quad culture but I was mostly simulation part. I feel

Ramon Roche: I,

Ryan Friedman: Yet. So our two pilot has a cart Google card number tutorial and...

Kimberly McGuire: that's,

Ryan Friedman: we we just got a Google Summer of code project accepted. That's going to port that to us too. So, I think that'll be one of the the first official tutorials is a visit, so that's going to be a vision based localization.

Ramon Roche: Right.

Ryan Friedman: And there's not there's not we're not going to do control at least in the there's three phases of that project and that's the first phase. So we'll have a tutorial, it's gonna be on the order pilot Wiki, but I think that if based on the discussions here, it might make sense to put it in the rust tutorials instead.

Kimberly McGuire: Yeah, I would say, why not? There's a couple I think maybe in slight examples, the Web port simulator. They actually made an official tutorial of tutorial in on the Ross website itself. Even though because people is the one that's open rebeltics, foundation is more using, they actually just proposed it. So, I think it's just It's not that open open. Robotics will say no. no tutorials here,...

Ryan Friedman: Yeah, I mean, there's

Kimberly McGuire: but it needs it needs to be grounded, of course and it needs to be The apps. Like I'm not sure like in terms of safety, if they want to have Yeah. Build instructions. It would be better in deep like coming back to the standards platform question.

Ryan Friedman: Yeah the biggest blocker for that to me is that the tool chain is completely different for the Autopilots than it is for the Ross. And we've done work to make it filled with coalcon but there's still a bunch of dependencies and environment setup. You have to do to get it to build that can't do in a package XML because it's not Debbie and or anything like that. Yeah.

Ramon Roche: That was gonna ask about doing as well. And I want to talk about tuning and simulation, should we talk about doing now? All...

Kimberly McGuire: Yeah, let's see. Because I'm just yeah,...

Ramon Roche: so What?

Kimberly McGuire: I'll change this tooling.

Ramon Roche: Now, what about assuming that we're using to build? Your Ross code or anything how it going on on the flight controller and interaction with both. I I've already heard that, it's not great. And since I constantly moving it doesn't make sense to maybe invest in the tooling right now. Now there's also not a lot of good ways to do integration testing between both between cross and whatever is in the other side. and that is, How big problem everyone is standardize or...

Kimberly McGuire: He?

Ramon Roche: make more robust interfaces?

Kimberly McGuire: Started on next week.

Ramon Roche: As anyone given any thought into this.

Gerald Peklar: The tooling so be use gazebo for simulation, but We had really a hard time of my students that worked on that trying to integrate an ultra-wide band sensor into gazebo. Simulation, really at that time. She was saying they are So many dependency, if you Set up gazebo and get it built. I think 13, repos, roundabout, you mentioned and that was a nightmare and I think that is also a big problem that if if you have something and and your compiler stops and you need to spend a week to figure out that maybe there was one repo changing.

Gerald Peklar: That's not very. very handy for phones users, so

Gerald Peklar: Yeah, it was great.

Ramon Roche: Alright, thank you. Anyone else have any experience with the tooling or simulation?

Théotime Balaguer: I'd say that. I mean there's so many different build tools and build like macro tools and I feel like if as we are working with Ross, if everything could be combined by Colcon, it would be better but I think for instance pays for is, is using pure make and not even see make If I'm not mistaken, maybe a mistaken, but

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Ramon Roche: Might.

Théotime Balaguer: But I mean, I felt like it was a double work to learn how caution works and how c-make works and then how how make pure may works to to fully understand the tooling. of everything that is needed to actually fly during

Ramon Roche: Thank you. Do you think if let's say the auto parts? Provided you. Already pre-built binary that you use working against. Would that help?

Théotime Balaguer: Well. I don't know because the, I mean, there's I think there's a scripts that compiles everything. So I mean this works because when you just close the repo and in build it it works fine. But then when you want to change some things and build it a bit differently or out of you, if you are friends and it you really have to understand the build tool, right? So,

Théotime Balaguer: so, I don't know, I think we're talking here about how we note about it or a the wall, like code chain needed to to operate a an IR, robot integrates resource nicely, and

Théotime Balaguer: And I think for now it's really two different parts of codes. It's actually you really have to to dig deep into and to learn and and then once you competent on the true different blocks, then you're good at the IR will robotics, right? But knowing only Ross, not allow you to fly your drone.

Théotime Balaguer: so, yeah, I don't know if because I think Corcon is quite Used in the Ross community in general. So if it's a tool that we State is a good tool. We could use it for everyone.

Ramon Roche: Thank you. That's a great feedback. Anyone else have anything to check here?

Ryan Friedman: Yeah. So for us, they're the two main thing. So we solve the tooling issue by making at least an ardu pilot of making it build with Coke on Which wasn't was sort of happy to get that working, but it's there. But the two main things for us are integrated testing The Ross to launch. Ecosystem is really steep learning curve and it doesn't have ability to do reuse between.

Ryan Friedman: Certain aspects of the launch description file that makes doing testing really hard because we want to launch. A seven or eight processes to test our system, and if we want to change one, we want to change a way something that's done. It's not like a parameter, but it's more of a We turn this component on or off. We have to rewrite the entire launch stuff. And it's not maintainable so to promote.

Ramon Roche: Yeah.

Ryan Friedman: So we have like CI running for, for doing this in a great testing. But there's a ton of code duplication right now. We're pretty worried about the maintenance burden for that.

Ryan Friedman: And then the other thing is the same. Simulation actually is a little better, but there's I'm not the expert talk of the simulation about, but rice from the art of pilot organizations. Also working on that, I want to come back with with what the what the missing tooling in the SIM is. I think most of it's there with Gazebo Garden. There was just a few small things.

Ramon Roche: And Ryan are you supporting only garden? Also gets evil classic.

Ryan Friedman: Now we we're not working on Classic anymore. We're just going with garden.

Ramon Roche: Thank you. Anyone else have any questions?

Ryan Friedman: Yep.

Ramon Roche: Any issues anyone want to comment anything?

Gerald Peklar: Of dimensions of a kit before is, Do you see this as tool as well? If yes, I think it was mentioned one of the statements that it's hard to learn because you need to know be an expert on both sides, different flight control, I think to get more people on that. It will be helpful to have their flight control Portion is already configured. That the vehicle is tuned, as it should be because you could spend weeks on getting your weekly flying. Well, that's not that complicated on the ground-based you on the mountain road to train, it's could be challenging.

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Gerald Peklar: But therefore, and and kid that has defaults software. That is set correctly. Could help in getting more people named playing around with us too.

Kimberly McGuire: I guess perhaps I would like to also put a comments on that like is it's like the Afghans duality between of course like you need to be an expert in both. And we can pour for instance, like we can provide the kids that's already has some standards controllers and can already fly quite well. but I guess the important thing also is like, how important is it to know as a beginner With a aerial vehicle to understand.

Ramon Roche: just,

Kimberly McGuire: Also the autopilot system because it is potentially a more dangerous thing. Maybe it is perhaps important for anybody that starts out an area of baltics. To have a basic understanding of how Autopilots work and what's controllers are and what an estimated or maybe not in full detail. But, or at least, like about safety features, like Okay, of course, crazy flies, Safe. But soon, as you push with a little bit bigger, proper propellers on there. Like a turtle boards is big, but it's safe. Unless we have to make the kids, super safe,...

Ramon Roche: The. Best.

Kimberly McGuire: but it's still, it's still remains a unstable platform, you can kick it. And it will crash you. The if you can turn turtle, balls are not a lot of the understand what I'm trying to say.

Gerald Peklar: Yeah, I I understand.

Ramon Roche: So please, please don't take your time.

Gerald Peklar: And and I think, yeah, maybe that's going too far. Because if you work with an aerial vehicle,...

Kimberly McGuire: Yeah.

Gerald Peklar: you also need to know the leading rules. And if we'd like to start on that, I don't know.

Gerald Peklar: It's different in Europe than in the US and ...

Ramon Roche: Let's jump.

Gerald Peklar: Indonesia. So, if we start with describing, what is needed to be allowed to fly at around outdoors and connect. Feel like a network connection.

Ramon Roche: Um, thank you Gerald. We have another race hand by Miguel.

Kimberly McGuire: I'm going to start on the next page,...

Miguel Fernandez: Hi, and

Kimberly McGuire: by the way. Oh, thank you.

Ramon Roche: I already data for you.

Miguel Fernandez: Just one common dad, where we were in this platform. For example, we've been using, we are trying to configure this PX for PC on essay Keith, that is like, as someone said, It's like, already be ill and drone that, in theory, has their own onboard computing, and all things should be configured to be ready to fly. But for us, those two, there is nothing. There isn't no this this configuration and in our case it's being super difficult to make it working in verse 2. 1 be able to know how we we have to configure this to make it like easy to fly out of the shell. And maybe if the tutorials that are for Rose, one are pretty good. So maybe if this is,

Miguel Fernandez: Like improve or rows too. Could be like one one platform that that can be used for just for beginners to have something that can fly indoors and outdoors. You can tweak things and know

more about how a real drone, right? But also make some like more computer competition or expensive task using these from birth computer.

Ramon Roche: Now. Thank you Miguel. Yeah, the PX for vision kid was a very very early effort by our team to Address this problem. But I think that a lot of shortcomings, the interfaces between the Machine could be the campaign computer in the flight controller would not really good. And the software needed to do. That wasn't really scalable at the time we were using The Px4 Avoidance Library, which is was using map, Ross and Rose one. And that got deprecated, a few months afterwards. So,

Ramon Roche: It just brings out a good question. So if we have kids hardware kids, they said enough if we ask the manufacturers to provide the kids or do we all actually need to ask them to Build the interfaces to put everything together or do we standardize and...

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Gerald Peklar: But it's you.

Ramon Roche: just ask the companies to provide the components and we as a community support standardized documentation or as much as possible. So that any user that knows the bushes a kit that has I don't know, it's prost capable

Ramon Roche: Knows how to interface with the companion computer. It knows how to talk to the flight controller and has the standard size of messages already. And which which is the way to go here.

Ryan Friedman: All the hardware manufacturers aren't software companies. So I don't I don't see them like holy bro. Do they even have a software developers? Okay, okay.

Kimberly McGuire: Yes.

Ramon Roche: They do, they do but you're right, you're right, Exactly. That was what? That's exactly why I'm asking this question because I deal with manufacturers all time and...

Ryan Friedman: Yeah.

Ramon Roche: they are they have no problem putting in resources to address them issues. But It's one thing to ask and OEM or a manufacturer to build a kit for you and that in this Humber entirely to ask a drum manufacturer, to make built a product for you. And We need to define Where do we want to draw the line here. And um so that we also can inform those manufacturers what they need to build right now there's a lot of uncertainty from them as well.

Miguel Fernandez: Small debate. If there is, for example, one image that can be provided and download and be set up into the companion computer, for example, in that case, this is something that can be done for the community and the people that just buy. This product has to do this setup and this can be easily a greater than an improved by the community. So by the software community, not for the manufacturers,

Miguel Fernandez: So I think something in the middle is the

Ramon Roche: Yes. Agreed. Yeah, the support burden. Is it sometimes too great.

Kimberly McGuire: I would like to comment that Bitcraze is mostly in hardware company with social software developers in there, but our scale is very different. Like we don't have a companion computer, like it's all the rules of ports so it's just a different skill and I would definitely understand the like manufacturers that make like these bigger kids, they have to need to have some kind of focus as well. And kind of also depends on the business model, I would say, because maintaining software next to making the hardware is a lot of work. But it's worth for at least. Like I usually called our marketing, the the software that comes with it. Because of course, like, you know, it's the thing that may actually makes it fly. But we spend quite a lot of a lot of time with it. And technically, that is not the core business. That's

Kimberly McGuire: Puts in the money. Let's say, like that's from the sales. So sometimes we do have a discussion R3, putting too much efforts on software development in that sense. And yeah we're not using peaks for we're having our own firmware. So it is it's kind of a balance, I would say and I think we go also called the good point there,...

Gerald Peklar: Could you?

Kimberly McGuire: Perhaps it should be kind of a balancing acts of how far should hardware developers. Go into making its Compatible enough, so that's others can. Continue the work because that's also kind of like, you know, there's also kind of an arts of providing good API so other people can build upon this. And where do you stop? Like we're Yeah. Just giving some kind of insights from. A hardware company.

Gerald Peklar: So Kimberly, you Yeah,...

Kimberly McGuire: Those the software suffer defenses.

Gerald Peklar: so you need a companion. Computer things like

Kimberly McGuire: True, I guess maybe the AI deck is one. But it's it's only 20 grams. I don't know if you've flown notification flash before.

Gerald Peklar: I've seen them, I'm working with a team that will bring next week, some crazy flies room events. And there I'm, I'm able we are also in the hardware manufacturer. We are even a semiconductors company...

Kimberly McGuire: Exactly even more hardware than we,

Gerald Peklar: but we're doing a lot of reference designs. And by the way, I've posted something in the chat. We have a throne kids because we are running and competition since some years already on on Px4 understand the hardware. And we have recently developed also a companion computer based on our I'm excited. And plus and the last competition was done with combination. And if it looks have a games on text I/O, The people have done a lot on Ross there recently, you know, and maybe something like this

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Gerald Peklar: We could work on and we also try to describe on our own git book how they setup needs to be done, how the software needs to be combined to make it work. We are not that far yet with the companion computer side. So the Ross two thing and need some more polishing but at least we have an image for the companion. Computer-based one with the Ross packages already included so you can flash the image and you have a working Linux system to overlay and prospect edges.

Gerald Peklar: That's the first link in my post. It's the 8mp Nefq.

Ramon Roche: Thank you John. Sorry I was I was muted the whole time.

Kimberly McGuire: it's

Ramon Roche: I was speaking question on that image that you made for that companion computer the you see trying to maintain that going forward. As an image.

Gerald Peklar: So we have actively maintaining that. Yes and so we go for the LTE versions.

Ramon Roche: All right.

Gerald Peklar: As usual. And if a new LT version is there, we will also update on the image.

Ramon Roche: Yeah, has anyone uses snaps?

Gerald Peklar: Oh yeah, yeah. To be.

Ramon Roche: Or any other package management.

Kimberly McGuire: Yes, we have we have used it before.

Gerald Peklar: So, because all the sensors that Speak cable would be nice...

Ramon Roche: As an alternative to providing the full image with everything installed in there.

Gerald Peklar: but we are not yet there.

Ramon Roche: yeah, no, we're not, definitely not yet there but I was thinking that it would be a lot of wasted effort if your way putting in your image and time to make that and then everyone else is doing the same thing. Sort of maybe makes sense, if we make packages available for known platforms instead. And target those instead so we can all maintain it together instead of having to maintain one single image per company.

Ramon Roche: And lower the burden of maintenance there. And at the same time, increase the community. Decrease the learning curve for a community to come in to any given platform. because every like it works the same way as say, let's say, the touring works the same way, or at least In theory works the same way. Would that help?

Ryan Friedman: yeah, I mean, I think The there's some work that's already done to build an image for a raspberry PI that has Ross to installed. And I think it's like the debt, Ross Desktop full but it doesn't include any flight software or any of that tool chain but I think it's definitely a start and after having gone through the process of having, to refill out how to flash a raspberry PI and install Ross, Two and build it from First, I built it from a source and then realized it didn't need to. I think that, that documentation of, I mean, on an aerial platform, you have to deploy on a companion computer, right? So having documentation on how to set that up, it would be a little more helpful that's in the main respiratorials rather than just discovering some repo online that shows you how to do it.

Ramon Roche: Yeah, right. I've also seen people try to build autopilot in Px4 within the Raspberry Pi.

Ryan Friedman: Yeah. Well,...

Ramon Roche: which,

Ryan Friedman: I mean I think that's normal because Cross-compile tool chain isn't maintained by Ross Eco Osrf. They deprecated that. So you pretty much have to compile one source nowadays. Unless you're like really experienced.

Ramon Roche: Hmm.

Ramon Roche: Maybe that's what we should know that.

Ryan Friedman: At least. As a developer, right? As a developer, you have to if you're just making tutorials, you can make binaries and that's fine.

Ramon Roche: Yeah, I personally have tried to do tutorials and Ps4 and Roth before at least three times already. And I giving up on Having a really nice install script in at first, I tried Docker to contenderize everything. And it works, but it's a really long investment to get it working and then if it's just a one-off after a few weeks is gonna get old and you need to maintain that. But and then I made moving to Big Ramp and have this whole image already as a VM and that's sort of works better but it's still not the great experience. So, Definitely think we, at least, if we're gonna start offering tutorials, we need to define how we can approach that.

00:40:00

Ramon Roche: Maybe the solution is to have this one build system that does everything for you wouldn't call God.

Ramon Roche: Whatever it is that it goes that happens afterwards Kimberly, you want to speak.

Kimberly McGuire: Um, I forgot what I want to say before. and I was just thinking because I, I tried to

Kimberly McGuire: I try to apply for like I was a way too late with starting with, it's like for the Roles developer day and they do use rochecks. Which already has like some kind of type of nice. Oh yeah, Web-based. VM environments. It's a kind of limited somehow, but I'm wondering. Like how? They don't really have a lot of aerial view, cool examples on that one but they have like a nice way to kind of like connect to it and things like that, and then you already have the full environment already available. But then webm

Kimberly McGuire: Yeah, I don't know. Just something that came came to mind. So like that might be also an option too, but I guess like it's just yet another VM all by limited. But it's kind of really made for beginners. It's too bad. I couldn't couldn't submit anything with that, but next time, I don't know if you guys heard of Rocheck. So for this, from the construct,

Kimberly McGuire: They have actually quite a lot of tutorials, I think if like one of the top today, talks about story proposed for today. There, I would say also like next to Roche itself. There was document, they sell, there are goods example of good tutorials.

Kimberly McGuire: but then that's all it's more of a comments and a question, I would say,

Ryan Friedman: I think having if we can get the gazebo stuff figured out And having a rochecked for. Doing a real development would be a pretty awesome as tutorial because this I've done a few those tutorials and they're that platform is pretty excellent. the fact that you can just open a web browser and you have a gazebo, simulation, and you don't have to install any dependencies,

Kimberly McGuire: I do have to say that the rochecks war, like it really depends who, I guess maybe the type of computer you had or the kind of description that you have that. It's tend to be a little bit slow.

Kimberly McGuire: So yeah, I don't know if that's because you will prom or I am. Rocheck from but yeah, it's it's something to

Kimberly McGuire: something to consider, I hope to play around with at least for some crazy flight tutorials, but Yeah.

Ramon Roche: Actually, I've never seen this before.

Kimberly McGuire: Rochecks. Or ...

Ramon Roche: Yeah. Drawstruct

Kimberly McGuire: well, I think the developer day that's coming up in I think July.

Kimberly McGuire: Not sure. Wait, I'll look it up. so they have to so they you can just make a tutorial whenever It's like in whatever time you want like you know, it's it's kind of like you can do, you can make one right now. but, Yeah, exactly. Yeah. Indeed that's the call for the one that has been added to that. It might be a nice classroom for that at least a server. But before perhaps we should maybe talk about standardization of a couple of student or like, how to build everything. But at least like in this, you can have. Okay. This is the current state how to build stuff we've tested. It's Like if again.

Ramon Roche: Yeah, Gerald. Go ahead.

Gerald Peklar: Since we have the statement of Ryan Raspberry Pios images full on the frost can be. Please add also, Nephew Plus has images. The full-on defrost as well. Please, I've put the link into the chat. Yeah.

Ramon Roche: Yep, let me in a minute.

Kimberly McGuire: It's in a it's now also in the notes.

Ramon Roche: Yep, thank you.

Gerald Peklar: Thank you.

Ramon Roche: All right, we have 10 more minutes and I want to Continue with the discussion. Here we have other items in the agenda, we're not going to be able to touch but to

Kimberly McGuire: yeah, I don't know that those were just like a suggestions but I guess like, I feel that there may be are not Yeah, maybe they're not any any people that just started out of Errorable to express like, we're all developers. It's perhaps a bit far away in our memory like when we started to Get started

with area or robotics. Right? Like you know we're old and rusty and we had to do the hard way. Everybody should learn it.

00:45:00

Théotime Balaguer: The eight months ago.

Kimberly McGuire: The hard way too ...

Gerald Peklar: You are going to.

Kimberly McGuire: but I know like Is there any anybody that just started out or is starting out?

Théotime Balaguer: Well. oh,

Gerald Peklar: Essential properties. Not. Find it.

Kimberly McGuire: See them. Are you just starting out or Yeah, yeah,...

Théotime Balaguer: Test, can you hear me? Oh sorry.

Ramon Roche: Yes.

Kimberly McGuire: we can area.

Théotime Balaguer: No, I started I really started eight months ago. I did a bit of Roche before but not really, with ion robotics, but I really started with UAVs eight months ago,...

Ramon Roche: Practices.

Théotime Balaguer: so I think it's quite new but Honestly. I I my my feeling is that when you just following the tutorials, it's works quite well. We have pigs for vision. Also, the first version the 1.5, and I mean, it worked well, with, with Ros one, etc. But then when you want to do more evolved stuff like, like, I don't know, I I worked on on the migrating to Gazebo Garden because we were using Gazebo classic before

Théotime Balaguer: And then the sitl version of these four wasn't working. but, I mean, With the right. Everything is on the Internet. I think it would be easier if we had more tutorials, of course. But I also know that it's really people have to write tutorials for them to exist. So it's hard to access that for for Benevolent developers of course.

Théotime Balaguer: But I think it's doing doable, and I feel in eight months, I have learned almost everything that is needed to to fly safely. Thanks for visions. So yeah. I don't know what to had. It was it was okay, right? But everything works in the Indian.

Ramon Roche: With enough motivation.

Théotime Balaguer: we love motivation in and, of course, Have this like I have to achieve it because it's my PhD is also. So Have any choice?

Ramon Roche: Yeah.

Kimberly McGuire: Good force. The first learning process. When exactly through the same thing. Not the first though, but with Brought to you. you just have to you just have to use it, that's the but yeah, no but it's it's a...

Ramon Roche: All right.

Kimberly McGuire: it's a good view on, you know, at least like how to like what is still Perhaps missing. So thanks for sharing. Sorry. Yeah, I will leave the lead to you. I'm taking off a bit too much. Sorry.

Ramon Roche: No, it's fine. Thank you. We have another race hand. See you.

Ramon Roche: Very low. You can barely hear you.

Zia K: Professor. S. I'm actually.

Kimberly McGuire: So yeah, we cannot hear you.

Ramon Roche: Not really.

Kimberly McGuire: yeah, like yeah.

Zia K: Okay, I'll just

Ramon Roche: yeah, but some of us had to leave the meeting and come back in order to make it work.

Kimberly McGuire: Yeah, sometimes if somebody else is joining Google meets in a non-chrome thing, it's their sometimes our issues.

Ramon Roche: It's not great.

Kimberly McGuire: Yeah. Well, I'm like I'm in don't tell anybody, I mean Edge.

Ramon Roche: All...

Kimberly McGuire: That but that's chromebase days,...

Ramon Roche: So for the,...

Kimberly McGuire: but yeah.

Ramon Roche: I guess we, we have a lot to go on on the tutorial discussion and

Ramon Roche: I guess we, as soon as we can, we might be able to define what the basic tutorial should be for rust in Ariel. And maybe we can standardize it in a way or not. Standardizing just make it in a way neutralize you know way that doesn't matter what's on the other side for us, the flight stock. If it's not to if it's bit crazy or autopilot or Px4, there should be a certain set of things that are the same.

Ryan Friedman: Is it possible to do? An aerial tutorial without using anything from the other side projects. That using Ross 2 control and Nav2 and whatever is available in gazebo. It is there even like a way to control planar quadcopter without having to rely on the controls and the embedded systems and that code base.

Ramon Roche: What? Can you want to respond that or Miguel?

Kimberly McGuire: I will I will go according to the official now. Well I I am actually currently busy of working out that's with to write a roast driver for the weapon simulator for the crazy fly, and I was exactly thinking about that. I managed to connect Nef2, but of course, there's no 3D planning. Okay, that's one, there's no Quatrical to control in rows control.

00:50:00

Ryan Friedman: Yeah.

Kimberly McGuire: Currently, it's either grounds robot-based or arm robot based. As I know so far from the very quick scanning and very unsound, scientific research, I've done. So, I had actually had to write a like in Cascade PD controller myself. And yeah or use like some kind of python bindings. Like I believe like beach for you guys use some kind of yeah, like some kind of bindings or...

Ramon Roche: Different.

Kimberly McGuire: some kind of part of the firmware to have software in the loop that is that is perhaps, but it's very Autopilot-based, I guess. and I guess for if you want to have the control somewhere else from the outer pattern, Yeah, then you also have to think about the lace if you have of port controller as well, and that might be also per up, slightly dangerous. I don't know. But at least in the ROS control.

Gerald Peklar: You know, I

Kimberly McGuire: I don't I haven't found any quadcopter controller.

Gerald Peklar: I think it would be more easier to start with off-board control. Because then you don't care or don't do not need to take care of the vehicle itself. Yeah. About the geometry and teduning and all this stuff. You just are sending target waypoints from Ross to the flood control saying. Yeah, move to XY set here. And doing that continuously. And that's how you control your vehicle movement. And then you don't need to take care. If it is a fixed wing multi rotor, okay? A little bit, you need to take care Because a multirot can behave differently than a fixed thing. You cannot move at one position up and down before clicking

Gerald Peklar: Unless you have a beetle but the way how you control it, how you need to set up the software is then independent from the vehicle. And that would be, I think the easier way forward. If we start with something like this, that we say we assume we are enough, port control mode or we have a flight control. We can control it in off-board control mode and just firing target waypoints.

Gerald Peklar: Or the heqposed, the outdated post messages.

Gerald Peklar: Something like this.

Ramon Roche: Thank ...

Kimberly McGuire: Yes. Thanks.

Ramon Roche: Gerald. We have one. I wear to raise hands. I am Let me go.

Ayham Alharbat: I think Gerald said exactly almost what I wanted to say, so that's thank you.

Ramon Roche: Thank you man. Miguel

Miguel Fernandez: Yeah, and that's exactly what we wanted to pursue with this, with our framework that you don't have to take care, explicitly about which platform you are using, or with robot configuration, you are using regarding that as your asset, is not the same thing a fixed wing or or multicopter. But Yeah, we try to to be to abstract this, these platform layer and try to, okay? I just want to give, I don't know, velocity set points or position set points and And and see and make a mission without actually taking care about.

Kimberly McGuire: He?

Miguel Fernandez: All that goes below. These this level

Kimberly McGuire: So more high level high level lab.

Miguel Fernandez: and I don't,

Kimberly McGuire: Low level should all be taken care of and

Miguel Fernandez: yeah, I'm with the simulation. It's easier to integrate because for example, I we've worked with with ignition and well with the new gazebo and very their quadcopter module. As I remember it only gives you like velocity commands, you cannot go. Like easily into for example, motor commands or things like this. So it's it's pretty easy to just integrate these one quadcopter in this gazebo one, and do some, some flights just taking this velocity the velocity commands, which is it's pretty similar what you do in the title. But in the turtle scene, when you are starting roster,

Kimberly McGuire: Yeah.

00:55:00

Ramon Roche: All right, Kim.

Kimberly McGuire: Yeah, I think for verse one you have to also rotor s project where a lot of things have imported to gazebo already. But actually, all a lot of those things has not been ported to the new gazebo as I know. But that Is perhaps a, perhaps a next. One of the next meetings we can talk about simulation more closely. But it's yeah. Oh good, but Ramon, um, looking at times, don't you?

Ramon Roche: Yes, I need to leave to have another community meeting that I need to run,...

Kimberly McGuire: Yeah, I can close off...

Ramon Roche: but let me know.

Kimberly McGuire: if you like, Oh yeah,...

Ramon Roche: Let me close it up.

Kimberly McGuire: sure go for it. Yeah. Yeah.

Ramon Roche: Thank you everyone for joining us. Today. We have one last thing that we really need to touch on which is the next meeting. We're proposing that the next meeting that's on June 7 at same time. Is that the same time? I think it's, yeah.

Kimberly McGuire: Yes. 2pm UTC it. Yeah. Universal Time. Universal. Grenada time.

Ramon Roche: All right. Where you're gonna set up a process. So that if anyone wants to present on this work group, we're gonna have a Form that you can apply to. But for now, please send us an email.

Ramon Roche: There's already, I think two people that want to present on the next one will let you know as soon as possible and performs with the agenda for the next meeting. And I think, based on this meeting, we're gonna post the recording. We're gonna post the meeting minutes in late, then we got enough to keep continue the tutorial discussion. So I'm going to open up forum post specifically for tutorials and tutorial discussion. It's okay. We touch on kids and hardware kids. But I think the next meeting we're gonna have someone that's gonna talk more about Harper. And maybe we can take that late and continue to this hardware discussion, then and we can focus the discussion on tutorials for now. Thank you so much for participating today. This was really amazing. I, I honestly didn't think we're gonna cover the whole hour with content. This amazing. Yeah. I already said, amazing three times. That's enough for me. All right, I got to log off. Thank you so much, Kim. Thank you so much, everyone. I get a move to the PA for community. Q&A if you want to join that, you're welcome and talk to you soon. Bye.

Kimberly McGuire: Will just close the recording now. All right. Awesome. Thanks for leading this time, Ramon. He's already gone. All right, I've I kind of feel The perhaps the tutorial was. So there were so many comments. We might need to have like maybe another discussion. Meeting about that next time in the future, but that's kind of switch it up in topics. But very Great input people.

Théotime Balaguer: Some Kimberly. Do you think,...

Kimberly McGuire: Yes.

Théotime Balaguer: do you think it would be possible for? I don't know, for a specific meetings where we know we're going to talk about a road devkit, for instance, to have to ask people from different companies that are really involved in In the development of our robotics to join the call.

Kimberly McGuire: Sure. Yeah, I think we should definitely encourage that. Like I try to at least because, for instance, like today is now about tutorial education. I invited some people that have written tutorials before. Fortunately, they were not able to join, but I think the maybe like now the focus was more on the people that have to learn and how to make it easier for them. Other than the people that have to write the tutorials because that's the whole different story, right? Like the stories you have to maintain it as well, documentation. And yeah. Automated tutorials. I looked at that. Well so that's that's also kind of a thought perhaps a separate topic apparently. It has to be separate topic but but yeah, I think if you know anybody, if for instance like we have scientific meetings, every we do the scientific meeting discussion meeting, the developer meeting then scientific meeting so on the stefans is going to be a presentation.

Kimberly McGuire: By one of us about their projects. And then so it's only going to be about that, but the meeting after that. So that's not seven. But there's two weeks after that it's going to be a developer meeting. So if it's going to be about hardware, which we're going to announce on this course, then please go. Go ahead and invite anybody that you think would be interested in this work. Have would like to have input in that year, I Yes. Sounds like a great plan.

Théotime Balaguer: Thank you.

Kimberly McGuire: Didn't close the recording. I did not. But I guess it was not.

Kimberly McGuire: It was not. Very secret stuff. Yeah, that's fine.

Théotime Balaguer: We can go and...

Théotime Balaguer: records. I don't care.

Kimberly McGuire: Yeah, exactly. But yeah. All right, good. I'll sign off. Thanks for joining and I'll see you in two weeks.

Gerald Peklar: See you. Thank you. But

Ryan Friedman: Thank you.

Meeting ended after 01:00:06 👋