

Hands-on session: core demos

1. AI Studio: concept-to-model prompts

- ▶ Cam Genius: motion law, cam profile, visual checker.
- ▶ PRBM 3R compliant mechanism: model assumptions, loads, sweep.
- ▶ Goal: fast framing before moving to executable artifacts.

2. Codex: UR5e Teach & Play

- ▶ Open app:
haijunsu-osu.github.io/UR5e_Teach_Play.
- ▶ Use Codex to inspect source/repo structure and trace teach/play logic.
- ▶ Small live task: diagnose or improve one feature, then run/check.

3. VS Code + Codex extension

- ▶ GDL chapters: RR/PR dyad synthesis and spherical linkage examples.
- ▶ RR1993 packet: general 6R IK prompt, reference PDFs, FK- IK -FK tests.
- ▶ Workflow: attach source, generate bounded files, run locally, report residuals.
- ▶ Local packet: `hands-on/GDL` and `hands-on/RR1993`.

4. GitHub repo summary

- ▶ Paper companions: `IK_6R_RR_1993`, `gdl_llm_reproduction`, SS dyad, Stewart FK.
- ▶ Apps: `UR5e_Teach_Play`, `kinematics_ug`, `interactive_cam_design`.
- ▶ Compliant mechanisms: `PRB_3R_model`, `CBCM_Ma_Chen`, `PRB_models`.

Advanced topics: orchestrating reliable AI work

1. Divide tasks across multiple agents

- ▶ Advantage: parallel work is faster, and each agent keeps a clean focused context.
- ▶ Context size is limited; split tasks so agents carry only their owned files/questions.
- ▶ Explorer: find equations, entry points, repo structure.
- ▶ Workers: implement solver/app slices; write tests, reports, visual checks.
- ▶ Lead: integrate, review, and decide whether evidence is enough.

separate files

clear merge point

one reviewer

no validation, no correctness claim

make expertise reusable

2. Know the limits of AI models

- ▶ Strong: translating explicit algorithms, scaffolding tests, reading repos.
- ▶ Weak: unstated conventions, branch completeness, numerical conditioning.
- ▶ Control: independent validation, source traceability, failure reports.

3. Agent skills: reusable AI-facing documents

- ▶ A skill is written for agents: when to use it, assumptions, deliverables.
- ▶ Encode repeatable workflows for GDL dyads, RR1993 IK, PRBM apps.
- ▶ Include validation harness expectations and common failure modes.