Francis Ken Nakagawa

Hardware UX & System Experience Designer

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SUMMARY

Principal hardware UX/HMI designer who designs the embedded interaction layer of intelligent physical products—screens, LEDs, capacitive touch, buttons, icons, haptics, sound, and behavior specs. Rare full-stack range: takes products from user research and interaction modeling down to PWM lighting behavior and SolidWorks tolerance validation, partnering across ID, ME/EE, firmware, product, and overseas NPI/ODM teams.

CORE SKILLS

Embedded interaction design, on-device UX, human-machine interface (HMI), state-machine logic, multimodal feedback, LED behavior systems, capacitive touch, button/dial press-logic, error & recovery flows, dead-front display design, iconography · Human-centered design, usability testing, competitive benchmarking, design-to-manufacturing handoff · Figma, Adobe CC, Rhino, KeyShot, SolidWorks, prototyping/digital fabrication, Arduino

EXPERIENCE

Principal UX Designer — Beauty, Clean & Home | SharkNinja 01.2026 – Present

- **Premium automatic hair curler —** Designed the embedded HMI around an 84.7mm circular display—rotary-dial navigation, clamp sensing, motor rotation, thermal readiness, haptics, and audio—with short/long/extended press logic, a full screen-state library, and instructional coaching animations.
- **Wet/dry vacuum mop —** Led a late-stage UI rescue, rebuilding the LED/icon signal hierarchy under fixed PCB and manufacturing constraints; defined color and error-priority logic, solved screenless pedal-null communication, and split delivery into a launch-ready fix plus a running-change vision.
- **Premium humidifier —** Led the end-to-end dead-front, hidden-until-lit touch interface; resolved a multi-input control problem with a shared-arrow model, replaced 7-segment with a custom dot-matrix display, and produced the full manufacturing-facing spec set including pixel maps and legibility analysis.
- **Steam mop, skin-treatment & platform iconography —** Built scalable LED error-code systems within fixed two-LED/two-button envelopes; redesigned RF/microcurrent device prompts and backlit alert icons (ISO 7000); standardized button iconography across beauty and home product families.
- Engineered light-as-interface techniques—sinusoidal PWM “breathing,” logarithmic power scaling, dead-front masking with layered diffusers—validated against manufacturing tolerances in SolidWorks.

Principal & Senior UX Hardware Designer | iRobot 02.2023 – 01.2026

- Led design of robot physical interfaces—buttons, displays, lights, sounds—and integrated behavioral cues (sound, light, motion) into cohesive experiences across product families, balancing aesthetics, cost, and engineering feasibility.
- Built and tested functional prototypes (button feel, sound timing, LED diffusion), ran in-house and in-home user testing, and partnered with ODM teams in Asia to translate prototypes into production-ready solutions.

Studio Lead / Lead Designer | Toyota Innovation Hub / Institute for Creative Integration 07.2016 – 08.2022

- Directed teams on autonomous-mobility and inclusive-design projects (incl. Toyota Woven City guidelines); collaborated with Toyota advanced design (CALTY) and pitched novel mobility systems to C-level executives; led a team of 7 through end-to-end research, prototyping, and AI-interaction testing.

EDUCATION & RECOGNITION

MFA, Design, California College of the Arts · **BA, Product Design**, Istituto Europeo di Design · **BBA**, Insper

Recognitions: Design & Emotion 2016 paper presenter · Spark Awards finalist · Diabetes Mine Design Challenge finalist (two categories) · Design Quest finalist · MiniSpace/FatBoy 3rd · Tissot Display Design Contest 3rd