[](https://photos.app.goo.gl/BiLG4x3iEUxUMguc8)

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| [home](https://arnoklein.info/index.html) | [cv](https://arnoklein.info/cv.html) | [mind](https://arnoklein.info/mind.html) | [brain](https://arnoklein.info/brain.html) | [design](https://arnoklein.info/design.html) |

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|  | Mind-assisting / digital phenotyping |
| A screenshot of a computer  AI-generated content may be incorrect. | **Monitoring experience and cognition** — **using a platform to build *your own* data collection, research, assessment, and intervention apps**  I created Curious ([gettingcurious.com](https://www.gettingcurious.com/), formerly “MindLogger”) to enable anyone anywhere to create their own mobile/web applications for conducting end-to-end encrypted, remote data collection, assessments, cognitive tasks, and interventions. It is easy to use and rich with features (survey tools, audio/video recordings, drawing, geolocation, specialized millisecond-precision cognitive tasks, etc.). My primary use is for (1) ecological momentary assessments, to know what people are thinking, feeling, and how they are behaving in their daily lives, and (2) collecting performance task data in Curious alongside sensor data (EEG, EMG, electrodermal, movement, heart rate, eye tracking, pupillometry, etc.). The project has received over $10 million in funding from the State of California, NIH, MIT, Paris LPI, and Hearst, Stavros Niarchos, and Hirani foundations. |
|  | **GenAI-powered language tools for research and interventions**  *LinguaLearn*is a set of tools under development that uses deep learning models, sound morphing, LLM-based word games, and real-time visual feedback to help people improve their pronunciation and verbal fluency.  *MediaMentor* is a new project that will use an LLM to help families grapple with concerning video content by introducing an interactive avatar that detects and discusses this content with the viewer.  *Mosaic* is a database and recommendation system that will use LLMs, expert source content, and template guides to generate personalized mental health guides for use by patients, parents, educators, and clinicians. |

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|  | Publications |
| A screenshot of a computer screen  AI-generated content may be incorrect. | Y Chen, D Jarecka, SA Abraham, R Gau, E Ng, DM Low, I Bevers, A Johnson, A Keshavan, **A Klein**, J Clucas, Z Rosli, SM Hodge, J Linkersdörfer, H Bartsch, S Das, D Fair, D Kennedy, SS Ghosh. [Standardizing survey data collection to enhance reproducibility: development and comparative evaluation of the ReproSchema ecosystem](http://dx.doi.org/10.2196/22369). *Journal of Medical Internet Research* 27:e63343 (2025). doi:10.2196/63343 PMID: 40644691 |
|  | L Chitiz, B Mckeown, B Mulholland, R Wallace, I Goodall-Halliwell, NS Ping-Ho, D Konu, GL Poerio, J Wammes, M Milham, **A Klein**, E Jefferies, J Smallwood. [Mapping cognition across lab and daily life using Experience-Sampling](https://www.sciencedirect.com/science/article/pii/S1053810025000467)[.](https://doi.org/10.1101/2024.07.22.604681) *Consciousness and Cognition* 131:103853 (2025).doi:10.1016/j.concog.2025.103853 |
|  | B Mulholland, L Chitiz, R Wallace, B Mckeown, M Milham, **A Klein**, R Leech, A Turnbull, E Jefferies, G Poerio, J Wammes, J Smallwood, J Stewart. [Patterns of ongoing thought in the real world and their link to mental health and well-being.](https://doi.org/10.1101/2024.07.22.604681) *Accepted by PLoS Mental Health (Apr. 2025) and on bioRxiv:* doi:10.1101/2024.07.22.604681 |
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|  | B Mulholland, I Goodall-Halliwell, R Wallace, L Chitiz, B Mckeown, A Rastan, G Poerio, R Leech, A Turnbull, **A Klein**, M Milham, J Wammes, E Jefferies, J Smallwood. [Patterns of ongoing thought in the real world.](https://doi.org/10.1016/j.concog.2023.103530) *Consciousness and Cognition* 114:103530 (2023). doi:10.1016/j.concog.2023.103530 |
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|  | L Omberg, E Chaibub Neto, TM Perumal, A Pratap, J Adams, BR Bloem, BM Bot, M Elson, SM Goldman, MR Kellen, K Kieburtz, **A Klein**, MA Little, R Schneider, C Suver, C Tarolli, CM Tanner, AD Trister, J Wilbanks, ER Dorsey, LM Mangravite. [Remote smartphone monitoring of Parkinson's disease and individual response to therapy.](https://mfr.osf.io/render?url=https://osf.io/9h4au/?action=download%26mode=render) *Nature Biotechnology* 40:480-487 (2022). doi: doi.org/10.1038/s41587-021-00974-9  Commentary: W Maetzler, A Pilotto. Digital assessment at home - mPower against Parkinson disease. *Nature Reviews Neurology* 17:661-662 (2021). doi:10.1038/s41582-021-00567-9 |
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|  | Invertebrate sleep and learning  I have collaborated with my identical twin brother for years, and the following studies have focused on how invertebrate sleep impacts a society, when and where bees sleep, and how it affects their ability to communicate. |
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|  | BA Klein, **A Klein**, MK Wray, UG Mueller, TD Seeley. [Sleep deprivation impairs precision of waggle dance signaling in honey bees.](https://mfr.osf.io/render?url=https://osf.io/98aj5/?action=download%26mode=render) *Proceedings of the National Academy of Sciences*. 107(52): 22705-22709 (2010). doi:10.1073/pnas.1009439108 |
|  | BA Klein, KM Olzsowy, **A Klein**, KM Saunders, TD Seeley. [Caste-dependent sleep of worker honey bees.](https://mfr.osf.io/render?url=https://osf.io/j9zf6/?action=download%26mode=render) *Journal of Experimental Biology*. 211: 3028-3040 (2008). doi:10.1242/jeb.017426 |