Description

Video was collected on March 1ˢᵗ, 2010 from a flight simulator at Pinnacle Aviation in Carlsbad.

The pilot was doing the simulation in order to keep his instrument rating current. Data was

collected with two cameras; the first was held over the shoulders of the two participants while

the second was placed on the dash of the simulator to track the pilot's gaze. The pilot's

interaction with the simulator in addition to the gesture interaction between pilot and instructor

provides for an extremely rich dataset. The area of interest is when the instructor notifies the

pilot that he needs to set the course guidance and explains why his previous setting was

incorrect.

Index of events:

{00.00} = time stamp in minutes.seconds **Area of transcription** <u>**Area of interest**</u> **

00.00 - joking about interacting

00.07 - right on the runway

00.13 – adjusting the seat

00.30 – receiving clearance from instructor

00.38 – holding short on the runway

00.57 – instructor giving flight instructions to pilot

01.15 – pilot repeating flight instructions

01.30 – pilot confirming that they are ready to fly

01.35 – adjusting the menus on the navigation screen

     1.37 – "I wanna get back to this thing"

     1.40 – interacting with the navigation screen and setting the flight plan

02.17 – selecting the airport

02.25 – checking the settings before take off

03.50 – instructor confirms that settings are correct

03.56 – pilot unpauses the simulator

04.07 – instructor reminds the pilot to preset the autopilot

04.14 – pilot knocks over one of our cameras

      04.17 - readjusting the camera and joking about knocking it over

04.30 – pilot sets the altitude and vertical speed

      04.37 – instructor corrects the pilot setting the vertical speed

      04.48 – instructor says set the heading and pitch

05.05 – instructor clears pilot for take off

05.11 – "parking brake"

      05.12 – pilot removes parking brake

05.28 – joking about taking off in lightning

05.51 – pilot takes off and activates the autopilot

05.55 – instructor confirms (as air traffic control) that he is on the right flight path

06.01 – pilot interacting with the vertical speed setting

      06.38 – instructor commenting on the pilots setting

06.45 – pilot stating vertical speed that was set

      06.50 – instructor confirming vertical speed is correct

07.18 – pilot checking that the approach is loaded

07.35 – pilot and instructor talking about the heading mode

08.08 – pilot forgets how to set something

      08.10 – "so time of ref"

      08.11 – pilot remembers how to set it

      08.15 – instructor telling pilot where to look in the menu

08.46 – instructor confirms that pilot is clear to fly Oceanside

08.57 – instructor reminds pilot that needs to set the course guidance

      08.58 – pilot asks "to where this thing wants"

      08.59 – instructor replies "to Oceanside"

      09.05 – pilot sets navigation mode

      09.11 – pilot asking instructor about course guidance

09.14 – instructor points to the airport location on the map

09.18 – instructor points to the pilot's screen where the original line course was

09.22 – instructor explains why the pilot's course guidance was wrong

<u>**09.30 – pilot gestures about going from "here to there"**</u> ******

09.47 – climbing to 2000 feet

09.58 – instructor confirms that the climb is authorized

10.20 – pilot looking at a map and changing a setting on the map

10.40 – instructor relaying weather information to the pilot

10.50 – pilot confirms that he received the weather information through redundant readback

11.10 – pilot increases the air speed

11.25 – instructor tells the pilot that he is clear for approach

12.17 – instructor and pilot talking about relaying information to SOCAL

12.32 – pilot adjusting air speed

13.08 – pilot adjusting the altitude

13.24 – "the plane feels slow now"

13.50 – pilot rechecks the heading mode

14.10 – pilot asks if he will be able to see the airport

14.22 – pilot confirms with the instructor if the settings are all correct

15.15 – instructor tells pilot to set navigation to VOR mode

15.30 – pilot asks if changing the setting will disengage the autopilot

15.50 – pilot changing the settings on the navigation screen

16.30 – just flying

17.38 – reengaging the autopilot

18.05 – pilot and instructor talking about the plane grabbing the attitude

18.26 – pilot kicks off the autopilot

18.37 – plane starts tilting up

18.46 – instructor joking with us "he doesn't fly like this in the air"

18.51 – pilot commenting how the simulator doesn't have kinesthetic feedback

19.00 – airplane stalls

    19.02 - nose of plain dives downward

    19.06 - corrective measures are implemented to raise nose of airplane upwards

19.11 - airplane stalls again

      19.17 - nose of airplane dives downward

      19.24 - corrective measures are implemented to raise nose of airplane upwards

19.38 - pilot resets course bearings

19.45 - airplane stalls again

      19.54 - evens the level of the nose of the airplane to prevent stalling

20.02 - airplane stalls again

      20.08 - the airplane begins to dive downward

      20.20 - the airplane is evened out again

21.34 - sets auto pilot at 4000 ft.

22.08 - switch to GPS mode of navigation

22.22 - pilot discusses reasons for airplane stalls

22.35 - pilot makes contact with radio tower (instructor) for entry to vista

22.47 - radio tower confirms pilot's coordinates and request

23.20 - pilot preemptively sets the minimum heading into the automatic heading synchronization system (included in onboard computer)

23.37 - radio tower makes contact with pilot regarding new coordinates to be implemented

23.46 - pilot verbally confirms new coordinates to be followed

23.49 - the instructor has the pilot pause the simulator to discuss relative location of aircraft to airport runway

      24.16 - the pilot and instructor begin problem solving for how to provide better "situational awareness" while flying

      25.09 - pilot verbally confirms that he understands the instructions given by instructor regarding posturing oneself for "situational awareness"

      26.02 - pilot decides that radio information from Julian is not necessary because the aircraft is flying in GPS mode with ILS (Instrument Landing System).

26.12 - pilot re-engages the flight simulator and "pause" mode is disengaged

26.15 - pilot resets autopilot because pausing and then re-engaging the simulator disrupts the past autopilot settings

27.08 - radio tower confirms current trajectory into Montgomery Airport

27.20 - pilot recognizes radio tower confirmation and repeats confirmation message

28.19 - pilot inputs next desired altitude of 2100 ft into the system

28.30 - pilot notes that the autopilot used in this simulator is not one he's familiar with

29.50 - pilot reviews noted altitudes and headings regarding entry into Montgomery field

30.38 - pilot preemptively enters a future heading into the system

30.59 - pilot and instructor discuss the glide slope (the final path followed by an aircraft as it is landing) for entry into Montgomery Field airport

32.39 - pilot disengages autopilot and enters manual-fly mode

32.52 - pilot pauses the simulator to discuss the last few minutes of onscreen system manipulation -- including a discussion of the glide slope

    33.12 - instructor mentions that complications stemmed from pilot's dropping in altitude to 2100 ft

    33.20 - both pilot and instructor discuss that the proper correction would have been to climb back to 3300 ft rather than selecting "altitude hold mode" to maintain altitude

    33.33 - instructor notes that by selecting "altitude hold" the programmed glide   slope was disengaged

    33.47 - instructor mentions the workings of "altitude hold mode"

34.29 - pilot re-engages simulator and takes it out of pause mode

34.34 - pilot flies the simulator manually because re-engaging the simulator takes the aircraft out of autopilot

34.44 - instructor prompts the pilot to look at pitch of aircraft because the nose of the airplane is pointed upwards

35.25 - the pilot turns the aircraft to the right in order to line up with the airstrip at Montgomery Field Airport

35.44 - pilot remarks that the aircraft is currently at 1200 ft and that a descent is in order

36.11 - the instructor and pilot decide to do a touch and go landing at Montgomery Field Airport

36.50 - the pilot is engaged in a precise tuning of the aircraft's positioning in relationship to the airstrip at Montgomery Field Airport -- he wishes to be parallel and aligned down the center of the airstrip

37.34 - the pilot guides the aircraft towards the airstrip

37.44 - the airplane contacts the runway

37.45 - the instructor compliments the landing

37.50 - the pilot continues down the center hash mark of the airstrip

Transcript

Note: Clip extracted from {08.57} to {09.34} in the recording

Key

Solid arrows indicate motion Dashed arrows indicate gaze Boxes indicate highlighting I = Instructor (on right) P = Pilot (on left)	

Time	Who	Talk	Gesture	Gaze	Comment
:01	I	you need to give it some course guidance		looking at the instruments	
:02	P	to (.) where this thing wants?	twisting the knob	towards the menu that appears on the screen	
:03	I	to Oceanside VOR		still looking at the pilots instruments	

:05	P	so…like that? no?	moves hand away from dial		
:07	I	yea…yea…yea!		still looking at the pilots instruments	
:08	P	boom!	(right after button press) hand begins downward motion	gaze beings to shift towards navigation screen	
:09		and now NAV mode	hand finishes downward motion and goes back up towards the next button (orange arrow first, then red arrow)	gazes still shifting to the right, towards other screen	
0:12		so now we're headed there	hand moves away from the instruments	looking towards the navigation screen (other screen)	

0:16	P	so before wh- why didn't I have course guidance?	points to the menu on the indicator screen	gaze shifts to the plane indicators	
0:18	I	because it was from oceans or …or (.) eh- from the airport	hand moves upward to point towards navigation screen	body shifts slightly to look at navigation screen	
0:22	P	right but this…this picture was about the same	wagging finger over menu	looking at the menu	
0:24	I	it was exactly the same (.)	pointing to the menu of the indicator screen	(gaze switch) instructor looks over at the pilot wagging his finger and then back at the navigation screen	

0:25		but your purple line was <u>way</u> the **heck** over here	quickly points back to the navigation screen and then **reaches** <u>(further than before)</u> <u>towards the indicator screen</u>	instructor looking at the menu on the instrument screen	Note: pilot's gaze follows the instructors arm (from 0:24 to 0:25)
0:30	I	right? It was from over [[<u>here</u>]]	<u>draws line</u> <u>with hand</u> on navigation screen	both the pilot and the instructor direct their gaze towards the navigation screen. All attention is focused on spot on the screen as shown by the red box.	
	P	[[oh]] I <u>see</u>	<u>points to</u> <u>where the</u> <u>instructor is</u> <u>drawing the</u> <u>line</u> with his arm		
0:31	P	what I've been trying to do is take me there <u>via that</u> … <u>via</u> <u>that</u>	<u>pilot draws a</u> <u>line</u> with his hand and both are still pointing to the navigation screen	both are still looking at the navigation screen	instructors head is blocking the view of pilots hand drawing the line, can only see forearm motion (see previous image)
	I	[exactly]			

0:34	P	You gotta like redo it from <u>here</u>	begins waving arms around then briefly stops at an arbitrary <u>space in front of him</u>	looks off to the side (maybe at indicator screen)	
0:36		I wanna go <u>there</u>	the pilot moves his <u>arms forward to a space further in front of him</u> and pauses there for a second	gaze still off to the side	Note: Yellow arrow indicates new arm position. Green arrow indicates previous arm position. Red arrow indicates motion.
0:37	I	right…right!			