



1
00:00:25,890 --> 00:00:16,960
monitor to alpha Bravo

2
00:00:25,900 --> 00:00:29,000
change rate

3
00:00:34,010 --> 00:00:31,550
didn't recognize it it won't play okay

4
00:00:40,360 --> 00:00:34,020
so the Winx I know that it took the

5
00:00:44,049 --> 00:00:40,370
change down

6
00:00:44,059 --> 00:00:48,930
change rate

7
00:00:54,060 --> 00:00:51,979
stop Marcus are you probably marking us

8
00:01:00,110 --> 00:00:54,070
but I'm gonna mark some of the ones that

9
00:01:00,120 --> 00:01:03,099
go

10
00:01:03,109 --> 00:01:13,109
zoom in

11
00:01:13,119 --> 00:01:15,910
right

12
00:01:20,770 --> 00:01:18,830
change rate

13
00:01:25,550 --> 00:01:20,780

right

14

00:01:41,390 --> 00:01:27,560

I think I would cycle a whole thing one

15

00:01:50,110 --> 00:01:43,770

okay

16

00:01:55,800 --> 00:01:50,120

monitor one monitor one monitor two

17

00:02:00,210 --> 00:01:58,219

standby

18

00:02:06,370 --> 00:02:00,220

activate

19

00:02:10,279 --> 00:02:06,380

go

20

00:02:10,289 --> 00:02:19,839

right stop

21

00:02:30,460 --> 00:02:22,170

change rate

22

00:02:36,400 --> 00:02:32,320

easy

23

00:02:38,690 --> 00:02:36,410

so cameras

24

00:02:40,640 --> 00:02:38,700

no cameras

25

00:02:44,290 --> 00:02:40,650

more

26

00:02:51,680 --> 00:02:44,300

too much

27

00:02:51,690 --> 00:02:59,559

change rate

28

00:02:59,569 --> 00:03:10,460

tilt up

29

00:03:10,470 --> 00:03:15,160

right

30

00:03:22,890 --> 00:03:17,120

stop

31

00:03:27,010 --> 00:03:25,030

tilt up

32

00:03:39,280 --> 00:03:27,020

stop

33

00:03:41,380 --> 00:03:39,290

select one time ideally the mood active

34

00:03:54,099 --> 00:03:41,390

LED is on the stamp a lit is also I beat

35

00:03:55,720 --> 00:03:54,109

you back the baby so if we I'll talk to

36

00:03:56,849 --> 00:03:55,730

chef about how we're gonna manage that

37

00:03:59,349 --> 00:03:56,859

okay

38

00:04:02,080 --> 00:03:59,359

like I told chef what's most important

39

00:04:04,089 --> 00:04:02,090

to that are most affects your opinion

40

00:04:09,250 --> 00:04:04,099

sure that is our most important feedback

41

00:04:14,360 --> 00:04:11,360

this would be where you'd be activated

42

00:04:23,050 --> 00:04:14,370

if you wanted to or as required that's

43

00:04:27,770 --> 00:04:25,970

but the data is compared against ground

44

00:04:30,590 --> 00:04:27,780

data that we acquired during astronaut

45

00:04:32,720 --> 00:04:30,600

training hopefully we'll be able to see

46

00:04:35,150 --> 00:04:32,730

are the effects the space environment

47

00:04:38,620 --> 00:04:35,160

has on the speech process and voice

48

00:04:44,930 --> 00:04:40,970

there are several successful

49

00:04:47,290 --> 00:04:44,940

applications of voice commanding systems

50

00:04:50,150 --> 00:04:47,300

in in the commercial sector for example

51
00:04:52,520 --> 00:04:50,160
in the area of aid to the handicapped

52
00:04:56,390 --> 00:04:52,530
and handicapped person can control by

53
00:04:59,780 --> 00:04:56,400
voice a motorized wheelchair medical

54
00:05:03,170 --> 00:04:59,790
reporting currently doctors are using

55
00:05:04,880 --> 00:05:03,180
voice recognition to to generate medical

56
00:05:07,880 --> 00:05:04,890
reports whereby they're looking at a

57
00:05:09,710 --> 00:05:07,890
x-ray for example and are examining it

58
00:05:11,660 --> 00:05:09,720
and are in putting words into the

59
00:05:13,760 --> 00:05:11,670
recognizer that it recognizes in its

60
00:05:16,700 --> 00:05:13,770
generating report about the doctor's

61
00:05:18,820 --> 00:05:16,710
examination other applications is access

62
00:05:21,470 --> 00:05:18,830
control where they use a speaker

63
00:05:23,210 --> 00:05:21,480

verification system is the person that

64

00:05:25,730 --> 00:05:23,220

wants to get into this door truly the

65

00:05:27,860 --> 00:05:25,740

person it is and they use a specific

66

00:05:29,930 --> 00:05:27,870

voice print algorithm to try and

67

00:05:33,620 --> 00:05:29,940

determine if this person is indeed the

68

00:05:35,540 --> 00:05:33,630

person he says he is the system that we

69

00:05:38,150 --> 00:05:35,550

use is what they call speaker dependence

70

00:05:40,070 --> 00:05:38,160

system which means that the crew each

71

00:05:42,410 --> 00:05:40,080

crew person has to train the system

72

00:05:44,570 --> 00:05:42,420

before it can use it training consists

73

00:05:46,910 --> 00:05:44,580

of going through our vocabulary times

74

00:05:49,310 --> 00:05:46,920

it's saying its word each word is then

75

00:05:51,230 --> 00:05:49,320

digitized and stored in memory as a

76
00:05:53,750 --> 00:05:51,240
template or voice print similar to a

77
00:05:55,880 --> 00:05:53,760
person's thumbprint and then all those

78
00:05:59,010 --> 00:05:55,890
words are then saved according to each

79
00:06:03,129 --> 00:06:02,589
okay when the astronaut wants to use the

80
00:06:04,330 --> 00:06:03,139
system

81
00:06:06,999 --> 00:06:04,340
he would come in you know plug in his

82
00:06:08,740 --> 00:06:07,009
headset and plug in the display in the

83
00:06:11,589 --> 00:06:08,750
shorting plug and then all he has to do

84
00:06:14,249 --> 00:06:11,599
is turn on the power switch to on and

85
00:06:17,649 --> 00:06:14,259
that's the only manual step necessary

86
00:06:19,119 --> 00:06:17,659
after when the system powers up then the

87
00:06:21,279 --> 00:06:19,129
system automatically krons

88
00:06:23,649 --> 00:06:21,289

yes not to say his name when it says his

89

00:06:25,420 --> 00:06:23,659

name it recognizes who he is would go

90

00:06:28,180 --> 00:06:25,430

out and load his templates from memory

91

00:06:30,219 --> 00:06:28,190

into the recognizer then when he wants

92

00:06:32,529 --> 00:06:30,229

to control a system you'll say a command

93

00:06:34,180 --> 00:06:32,539

it takes that word and digitizes it and

94

00:06:36,279 --> 00:06:34,190

compares it with the words that were

95

00:06:38,559 --> 00:06:36,289

loaded into the recognizer if it finds a

96

00:06:40,719 --> 00:06:38,569

match it sends that infrared sensing

97

00:06:42,520 --> 00:06:40,729

information from the recognizer to are

98

00:06:44,559 --> 00:06:42,530

controlling Hardware where we process

99

00:06:47,110 --> 00:06:44,569

information figure out what word it was

100

00:06:49,089 --> 00:06:47,120

and then send the appropriate signal out

101
00:06:50,749 --> 00:06:49,099
to the CCTV system to control the camera

102
00:06:53,719 --> 00:06:50,759
or movement or

103
00:06:55,790 --> 00:06:53,729
whatever the function happens the voice

104
00:06:57,920 --> 00:06:55,800
command system is the first experiment

105
00:07:00,230 --> 00:06:57,930
to be flown in space which uses voices

106
00:07:02,299 --> 00:07:00,240
to control we think this is going to be

107
00:07:04,640 --> 00:07:02,309
useful to be astronauts for two reasons

108
00:07:06,409 --> 00:07:04,650
and the first reason is that by having a

109
00:07:08,179 --> 00:07:06,419
system which is voice controlled the

110
00:07:11,179 --> 00:07:08,189
astronauts hands and eyes are free to

111
00:07:13,519 --> 00:07:11,189
perform other tasks the second reason is

112
00:07:15,200 --> 00:07:13,529
that by using a voice control system it

113
00:07:17,510 --> 00:07:15,210

isn't necessary for you to be in the

114

00:07:18,980 --> 00:07:17,520

location where the system is in order to

115

00:07:23,929 --> 00:07:18,990

control it so you're free to move around

116

00:07:26,029 --> 00:07:23,939

and you can be remotely located no we

117

00:07:28,399 --> 00:07:26,039

can have as many people as want to can

118

00:07:32,329 --> 00:07:28,409

use our system we have it set up so that

119

00:07:34,610 --> 00:07:32,339

only five five people can actually have

120

00:07:37,279 --> 00:07:34,620

their voices put on to e-square bumps

121

00:07:40,100 --> 00:07:37,289

but we also have the ability to retrain

122

00:07:41,689 --> 00:07:40,110

templates real-time so anybody who wants

123

00:07:43,760 --> 00:07:41,699

to use the system may not already have

124

00:07:45,320 --> 00:07:43,770

theirs templates made but they can come

125

00:07:47,389 --> 00:07:45,330

up to the system and make their template

126

00:07:48,679 --> 00:07:47,399

anytime they want so we're not limited

127

00:07:58,370 --> 00:07:48,689

on the number of people who can use the

128

00:08:02,170 --> 00:08:00,500

all right well we have 40 commands that

129

00:08:04,580 --> 00:08:02,180

are possible on the voice command system

130

00:08:07,070 --> 00:08:04,590

most of these commands are exact

131

00:08:09,230 --> 00:08:07,080

duplicates to what are on a CCTV manual

132

00:08:11,240 --> 00:08:09,240

switch panel these are selecting

133

00:08:12,830 --> 00:08:11,250

monitors cameras and working in the

134

00:08:16,010 --> 00:08:12,840

camera motions like panning and tilting

135

00:08:18,350 --> 00:08:16,020

zooming focusing all of those we also

136

00:08:20,810 --> 00:08:18,360

have some VCS unique commands which are

137

00:08:23,600 --> 00:08:20,820

used to activate the system deactivate

138

00:08:26,690 --> 00:08:23,610

the system identify the user and we also

139

00:08:29,510 --> 00:08:26,700

have some special macro commands for

140

00:08:31,160 --> 00:08:29,520

example we have a command that will stow

141

00:08:33,200 --> 00:08:31,170

all of the cameras in the payload Bay

142

00:08:35,270 --> 00:08:33,210

into the position that they have to be

143

00:08:38,300 --> 00:08:35,280

in for launch and entry simply by saying

144

00:08:40,520 --> 00:08:38,310

still cameras so we also have some

145

00:08:45,750 --> 00:08:40,530

special features that the manual switch

146

00:08:48,930 --> 00:08:47,699

well the way we chose the words to use

147

00:08:51,360 --> 00:08:48,940

is because they're the words that are

148

00:08:52,650 --> 00:08:51,370

actually on the switch panel so they're

149

00:08:55,410 --> 00:08:52,660

the ones that are familiar with when

150

00:08:58,199 --> 00:08:55,420

they think of moving a camera they think

151
00:09:00,629 --> 00:08:58,209
of tilting it up so we selected all of

152
00:09:02,900 --> 00:09:00,639
those works now they did tailor their

153
00:09:04,620 --> 00:09:02,910
vocabulary to their personal and use

154
00:09:06,509 --> 00:09:04,630
words that they were the most

155
00:09:07,319 --> 00:09:06,519
comfortable with words that work the

156
00:09:09,870 --> 00:09:07,329
best for them

157
00:09:11,370 --> 00:09:09,880
so both of our astronauts have have a

158
00:09:13,379 --> 00:09:11,380
different vocabulary but they're also

159
00:09:15,090 --> 00:09:13,389
very similar and they're the words that

160
00:09:24,370 --> 00:09:15,100
make sense to them and that's how we

161
00:09:29,260 --> 00:09:26,590
well there's not a lot known about the

162
00:09:31,660 --> 00:09:29,270
effects of microgravity on the voice we

163
00:09:33,790 --> 00:09:31,670

do know that in zero gravity that the

164

00:09:36,820 --> 00:09:33,800

position and the shape of the lungs and

165

00:09:39,550 --> 00:09:36,830

diaphragm are altered now this cause is

166

00:09:41,770 --> 00:09:39,560

a great enough distortion in the voice

167

00:09:44,590 --> 00:09:41,780

good recognition could be difficult to

168

00:09:49,720 --> 00:09:44,600

get so we're expecting that this may be

169

00:09:51,550 --> 00:09:49,730

a problem well what we're going to do is

170

00:09:53,860 --> 00:09:51,560

that if the astronauts do find that they

171

00:09:55,660 --> 00:09:53,870

have trouble getting recognition we have

172

00:09:58,300 --> 00:09:55,670

the ability to remake their templates

173

00:10:00,190 --> 00:09:58,310

real time so simply by clicking this

174

00:10:01,780 --> 00:10:00,200

mode switch try the Fitzsimmons

175

00:10:04,270 --> 00:10:01,790

automatically put into the template

176
00:10:06,220 --> 00:10:04,280
making mode and our system will prompt

177
00:10:08,020 --> 00:10:06,230
them through the entire vocabulary list

178
00:10:09,490 --> 00:10:08,030
they'll say each word twice and they'll

179
00:10:11,050 --> 00:10:09,500
have a brand new set of templates that

180
00:10:15,850 --> 00:10:11,060
are real and representative of their

181
00:10:17,050 --> 00:10:15,860
voice at that time it feels so fabulous

182
00:10:18,850 --> 00:10:17,060
you know there's times when you really

183
00:10:21,220 --> 00:10:18,860
think it isn't gonna fly it's just it's

184
00:10:22,930 --> 00:10:21,230
not gonna go and now not only is it

185
00:10:25,120 --> 00:10:22,940
going to go but our astronauts love it

186
00:10:26,920 --> 00:10:25,130
they love it they're having fun with it

187
00:10:29,320 --> 00:10:26,930
everybody we've shown it to like that

188
00:10:31,240 --> 00:10:29,330

people are coming up out of the corners

189

00:10:32,290 --> 00:10:31,250

with ideas of how to use it and it