INDY5 Helmet

SOFTWARE REQUIREMENTS SPECIFICATION (SRS)

CS4850-2

Spring 2024

Professor Perry

2/13/24

Indy5 Helmet

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[1.1 Overview 3](https://word-edit.officeapps.live.com/we/wordeditorframe.aspx?new=1&ui=en-us&rs=en-us&wopisrc=https%3A%2F%2Fkennesawedu.sharepoint.com%2Fsites%2FTeam-4850-02Spr24-Indy--5Helmet%2F_vti_bin%2Fwopi.ashx%2Ffiles%2F69bc20e2047b4c49958462044ffd8ece&wdenableroaming=1&mscc=1&hid=e47ba4a1-003f-4de7-8e1f-ab8fc88a73ad.0&uih=teams&uiembed=1&wdlcid=en-us&jsapi=1&jsapiver=v2&corrid=322ed846-bb17-4035-803e-df9ec8328788&usid=322ed846-bb17-4035-803e-df9ec8328788&newsession=1&sftc=1&uihit=UnifiedUiHostTeams&muv=v1&accloop=1&sdr=6&scnd=1&sat=1&rat=1&sams=1&mtf=1&sfp=1&halh=1&hch=1&hmh=1&hwfh=1&hsth=1&sih=1&unh=1&onw=1&dchat=1&sc=%7B%22pmo%22%3A%22https%3A%2F%2Fwww.microsoft365.com%22%2C%22pmshare%22%3Atrue%7D&ctp=LeastProtected&rct=Normal&wdorigin=TEAMS-ELECTRON.teamsSdk.openFilePreview&wdhostclicktime=1707761524601&wdredirectionreason=Unified_SingleFlush#_Toc124276762)

[1.2 Project Goals 3](https://word-edit.officeapps.live.com/we/wordeditorframe.aspx?new=1&ui=en-us&rs=en-us&wopisrc=https%3A%2F%2Fkennesawedu.sharepoint.com%2Fsites%2FTeam-4850-02Spr24-Indy--5Helmet%2F_vti_bin%2Fwopi.ashx%2Ffiles%2F69bc20e2047b4c49958462044ffd8ece&wdenableroaming=1&mscc=1&hid=e47ba4a1-003f-4de7-8e1f-ab8fc88a73ad.0&uih=teams&uiembed=1&wdlcid=en-us&jsapi=1&jsapiver=v2&corrid=322ed846-bb17-4035-803e-df9ec8328788&usid=322ed846-bb17-4035-803e-df9ec8328788&newsession=1&sftc=1&uihit=UnifiedUiHostTeams&muv=v1&accloop=1&sdr=6&scnd=1&sat=1&rat=1&sams=1&mtf=1&sfp=1&halh=1&hch=1&hmh=1&hwfh=1&hsth=1&sih=1&unh=1&onw=1&dchat=1&sc=%7B%22pmo%22%3A%22https%3A%2F%2Fwww.microsoft365.com%22%2C%22pmshare%22%3Atrue%7D&ctp=LeastProtected&rct=Normal&wdorigin=TEAMS-ELECTRON.teamsSdk.openFilePreview&wdhostclicktime=1707761524601&wdredirectionreason=Unified_SingleFlush#_Toc124276763)

[1.3 Definitions and Acronyms 3](https://word-edit.officeapps.live.com/we/wordeditorframe.aspx?new=1&ui=en-us&rs=en-us&wopisrc=https%3A%2F%2Fkennesawedu.sharepoint.com%2Fsites%2FTeam-4850-02Spr24-Indy--5Helmet%2F_vti_bin%2Fwopi.ashx%2Ffiles%2F69bc20e2047b4c49958462044ffd8ece&wdenableroaming=1&mscc=1&hid=e47ba4a1-003f-4de7-8e1f-ab8fc88a73ad.0&uih=teams&uiembed=1&wdlcid=en-us&jsapi=1&jsapiver=v2&corrid=322ed846-bb17-4035-803e-df9ec8328788&usid=322ed846-bb17-4035-803e-df9ec8328788&newsession=1&sftc=1&uihit=UnifiedUiHostTeams&muv=v1&accloop=1&sdr=6&scnd=1&sat=1&rat=1&sams=1&mtf=1&sfp=1&halh=1&hch=1&hmh=1&hwfh=1&hsth=1&sih=1&unh=1&onw=1&dchat=1&sc=%7B%22pmo%22%3A%22https%3A%2F%2Fwww.microsoft365.com%22%2C%22pmshare%22%3Atrue%7D&ctp=LeastProtected&rct=Normal&wdorigin=TEAMS-ELECTRON.teamsSdk.openFilePreview&wdhostclicktime=1707761524601&wdredirectionreason=Unified_SingleFlush#_Toc124276764)

[1.4 Assumptions 3](https://word-edit.officeapps.live.com/we/wordeditorframe.aspx?new=1&ui=en-us&rs=en-us&wopisrc=https%3A%2F%2Fkennesawedu.sharepoint.com%2Fsites%2FTeam-4850-02Spr24-Indy--5Helmet%2F_vti_bin%2Fwopi.ashx%2Ffiles%2F69bc20e2047b4c49958462044ffd8ece&wdenableroaming=1&mscc=1&hid=e47ba4a1-003f-4de7-8e1f-ab8fc88a73ad.0&uih=teams&uiembed=1&wdlcid=en-us&jsapi=1&jsapiver=v2&corrid=322ed846-bb17-4035-803e-df9ec8328788&usid=322ed846-bb17-4035-803e-df9ec8328788&newsession=1&sftc=1&uihit=UnifiedUiHostTeams&muv=v1&accloop=1&sdr=6&scnd=1&sat=1&rat=1&sams=1&mtf=1&sfp=1&halh=1&hch=1&hmh=1&hwfh=1&hsth=1&sih=1&unh=1&onw=1&dchat=1&sc=%7B%22pmo%22%3A%22https%3A%2F%2Fwww.microsoft365.com%22%2C%22pmshare%22%3Atrue%7D&ctp=LeastProtected&rct=Normal&wdorigin=TEAMS-ELECTRON.teamsSdk.openFilePreview&wdhostclicktime=1707761524601&wdredirectionreason=Unified_SingleFlush#_Toc124276765)

[2.0 Design Constraints 3](https://word-edit.officeapps.live.com/we/wordeditorframe.aspx?new=1&ui=en-us&rs=en-us&wopisrc=https%3A%2F%2Fkennesawedu.sharepoint.com%2Fsites%2FTeam-4850-02Spr24-Indy--5Helmet%2F_vti_bin%2Fwopi.ashx%2Ffiles%2F69bc20e2047b4c49958462044ffd8ece&wdenableroaming=1&mscc=1&hid=e47ba4a1-003f-4de7-8e1f-ab8fc88a73ad.0&uih=teams&uiembed=1&wdlcid=en-us&jsapi=1&jsapiver=v2&corrid=322ed846-bb17-4035-803e-df9ec8328788&usid=322ed846-bb17-4035-803e-df9ec8328788&newsession=1&sftc=1&uihit=UnifiedUiHostTeams&muv=v1&accloop=1&sdr=6&scnd=1&sat=1&rat=1&sams=1&mtf=1&sfp=1&halh=1&hch=1&hmh=1&hwfh=1&hsth=1&sih=1&unh=1&onw=1&dchat=1&sc=%7B%22pmo%22%3A%22https%3A%2F%2Fwww.microsoft365.com%22%2C%22pmshare%22%3Atrue%7D&ctp=LeastProtected&rct=Normal&wdorigin=TEAMS-ELECTRON.teamsSdk.openFilePreview&wdhostclicktime=1707761524601&wdredirectionreason=Unified_SingleFlush#_Toc124276766)

[2.1 Environment 3](https://word-edit.officeapps.live.com/we/wordeditorframe.aspx?new=1&ui=en-us&rs=en-us&wopisrc=https%3A%2F%2Fkennesawedu.sharepoint.com%2Fsites%2FTeam-4850-02Spr24-Indy--5Helmet%2F_vti_bin%2Fwopi.ashx%2Ffiles%2F69bc20e2047b4c49958462044ffd8ece&wdenableroaming=1&mscc=1&hid=e47ba4a1-003f-4de7-8e1f-ab8fc88a73ad.0&uih=teams&uiembed=1&wdlcid=en-us&jsapi=1&jsapiver=v2&corrid=322ed846-bb17-4035-803e-df9ec8328788&usid=322ed846-bb17-4035-803e-df9ec8328788&newsession=1&sftc=1&uihit=UnifiedUiHostTeams&muv=v1&accloop=1&sdr=6&scnd=1&sat=1&rat=1&sams=1&mtf=1&sfp=1&halh=1&hch=1&hmh=1&hwfh=1&hsth=1&sih=1&unh=1&onw=1&dchat=1&sc=%7B%22pmo%22%3A%22https%3A%2F%2Fwww.microsoft365.com%22%2C%22pmshare%22%3Atrue%7D&ctp=LeastProtected&rct=Normal&wdorigin=TEAMS-ELECTRON.teamsSdk.openFilePreview&wdhostclicktime=1707761524601&wdredirectionreason=Unified_SingleFlush#_Toc124276767)

[2.2 User Characteristics 3](https://word-edit.officeapps.live.com/we/wordeditorframe.aspx?new=1&ui=en-us&rs=en-us&wopisrc=https%3A%2F%2Fkennesawedu.sharepoint.com%2Fsites%2FTeam-4850-02Spr24-Indy--5Helmet%2F_vti_bin%2Fwopi.ashx%2Ffiles%2F69bc20e2047b4c49958462044ffd8ece&wdenableroaming=1&mscc=1&hid=e47ba4a1-003f-4de7-8e1f-ab8fc88a73ad.0&uih=teams&uiembed=1&wdlcid=en-us&jsapi=1&jsapiver=v2&corrid=322ed846-bb17-4035-803e-df9ec8328788&usid=322ed846-bb17-4035-803e-df9ec8328788&newsession=1&sftc=1&uihit=UnifiedUiHostTeams&muv=v1&accloop=1&sdr=6&scnd=1&sat=1&rat=1&sams=1&mtf=1&sfp=1&halh=1&hch=1&hmh=1&hwfh=1&hsth=1&sih=1&unh=1&onw=1&dchat=1&sc=%7B%22pmo%22%3A%22https%3A%2F%2Fwww.microsoft365.com%22%2C%22pmshare%22%3Atrue%7D&ctp=LeastProtected&rct=Normal&wdorigin=TEAMS-ELECTRON.teamsSdk.openFilePreview&wdhostclicktime=1707761524601&wdredirectionreason=Unified_SingleFlush#_Toc124276768)

[2.3 System 3](https://word-edit.officeapps.live.com/we/wordeditorframe.aspx?new=1&ui=en-us&rs=en-us&wopisrc=https%3A%2F%2Fkennesawedu.sharepoint.com%2Fsites%2FTeam-4850-02Spr24-Indy--5Helmet%2F_vti_bin%2Fwopi.ashx%2Ffiles%2F69bc20e2047b4c49958462044ffd8ece&wdenableroaming=1&mscc=1&hid=e47ba4a1-003f-4de7-8e1f-ab8fc88a73ad.0&uih=teams&uiembed=1&wdlcid=en-us&jsapi=1&jsapiver=v2&corrid=322ed846-bb17-4035-803e-df9ec8328788&usid=322ed846-bb17-4035-803e-df9ec8328788&newsession=1&sftc=1&uihit=UnifiedUiHostTeams&muv=v1&accloop=1&sdr=6&scnd=1&sat=1&rat=1&sams=1&mtf=1&sfp=1&halh=1&hch=1&hmh=1&hwfh=1&hsth=1&sih=1&unh=1&onw=1&dchat=1&sc=%7B%22pmo%22%3A%22https%3A%2F%2Fwww.microsoft365.com%22%2C%22pmshare%22%3Atrue%7D&ctp=LeastProtected&rct=Normal&wdorigin=TEAMS-ELECTRON.teamsSdk.openFilePreview&wdhostclicktime=1707761524601&wdredirectionreason=Unified_SingleFlush#_Toc124276769)

[3.0 Functional Requirements 3](https://word-edit.officeapps.live.com/we/wordeditorframe.aspx?new=1&ui=en-us&rs=en-us&wopisrc=https%3A%2F%2Fkennesawedu.sharepoint.com%2Fsites%2FTeam-4850-02Spr24-Indy--5Helmet%2F_vti_bin%2Fwopi.ashx%2Ffiles%2F69bc20e2047b4c49958462044ffd8ece&wdenableroaming=1&mscc=1&hid=e47ba4a1-003f-4de7-8e1f-ab8fc88a73ad.0&uih=teams&uiembed=1&wdlcid=en-us&jsapi=1&jsapiver=v2&corrid=322ed846-bb17-4035-803e-df9ec8328788&usid=322ed846-bb17-4035-803e-df9ec8328788&newsession=1&sftc=1&uihit=UnifiedUiHostTeams&muv=v1&accloop=1&sdr=6&scnd=1&sat=1&rat=1&sams=1&mtf=1&sfp=1&halh=1&hch=1&hmh=1&hwfh=1&hsth=1&sih=1&unh=1&onw=1&dchat=1&sc=%7B%22pmo%22%3A%22https%3A%2F%2Fwww.microsoft365.com%22%2C%22pmshare%22%3Atrue%7D&ctp=LeastProtected&rct=Normal&wdorigin=TEAMS-ELECTRON.teamsSdk.openFilePreview&wdhostclicktime=1707761524601&wdredirectionreason=Unified_SingleFlush#_Toc124276770)

[4.0 Non-Functional Requirements 3](https://word-edit.officeapps.live.com/we/wordeditorframe.aspx?new=1&ui=en-us&rs=en-us&wopisrc=https%3A%2F%2Fkennesawedu.sharepoint.com%2Fsites%2FTeam-4850-02Spr24-Indy--5Helmet%2F_vti_bin%2Fwopi.ashx%2Ffiles%2F69bc20e2047b4c49958462044ffd8ece&wdenableroaming=1&mscc=1&hid=e47ba4a1-003f-4de7-8e1f-ab8fc88a73ad.0&uih=teams&uiembed=1&wdlcid=en-us&jsapi=1&jsapiver=v2&corrid=322ed846-bb17-4035-803e-df9ec8328788&usid=322ed846-bb17-4035-803e-df9ec8328788&newsession=1&sftc=1&uihit=UnifiedUiHostTeams&muv=v1&accloop=1&sdr=6&scnd=1&sat=1&rat=1&sams=1&mtf=1&sfp=1&halh=1&hch=1&hmh=1&hwfh=1&hsth=1&sih=1&unh=1&onw=1&dchat=1&sc=%7B%22pmo%22%3A%22https%3A%2F%2Fwww.microsoft365.com%22%2C%22pmshare%22%3Atrue%7D&ctp=LeastProtected&rct=Normal&wdorigin=TEAMS-ELECTRON.teamsSdk.openFilePreview&wdhostclicktime=1707761524601&wdredirectionreason=Unified_SingleFlush#_Toc124276771)

[4.1 Security 3](https://word-edit.officeapps.live.com/we/wordeditorframe.aspx?new=1&ui=en-us&rs=en-us&wopisrc=https%3A%2F%2Fkennesawedu.sharepoint.com%2Fsites%2FTeam-4850-02Spr24-Indy--5Helmet%2F_vti_bin%2Fwopi.ashx%2Ffiles%2F69bc20e2047b4c49958462044ffd8ece&wdenableroaming=1&mscc=1&hid=e47ba4a1-003f-4de7-8e1f-ab8fc88a73ad.0&uih=teams&uiembed=1&wdlcid=en-us&jsapi=1&jsapiver=v2&corrid=322ed846-bb17-4035-803e-df9ec8328788&usid=322ed846-bb17-4035-803e-df9ec8328788&newsession=1&sftc=1&uihit=UnifiedUiHostTeams&muv=v1&accloop=1&sdr=6&scnd=1&sat=1&rat=1&sams=1&mtf=1&sfp=1&halh=1&hch=1&hmh=1&hwfh=1&hsth=1&sih=1&unh=1&onw=1&dchat=1&sc=%7B%22pmo%22%3A%22https%3A%2F%2Fwww.microsoft365.com%22%2C%22pmshare%22%3Atrue%7D&ctp=LeastProtected&rct=Normal&wdorigin=TEAMS-ELECTRON.teamsSdk.openFilePreview&wdhostclicktime=1707761524601&wdredirectionreason=Unified_SingleFlush#_Toc124276772)

[4.2 Capacity 4](https://word-edit.officeapps.live.com/we/wordeditorframe.aspx?new=1&ui=en-us&rs=en-us&wopisrc=https%3A%2F%2Fkennesawedu.sharepoint.com%2Fsites%2FTeam-4850-02Spr24-Indy--5Helmet%2F_vti_bin%2Fwopi.ashx%2Ffiles%2F69bc20e2047b4c49958462044ffd8ece&wdenableroaming=1&mscc=1&hid=e47ba4a1-003f-4de7-8e1f-ab8fc88a73ad.0&uih=teams&uiembed=1&wdlcid=en-us&jsapi=1&jsapiver=v2&corrid=322ed846-bb17-4035-803e-df9ec8328788&usid=322ed846-bb17-4035-803e-df9ec8328788&newsession=1&sftc=1&uihit=UnifiedUiHostTeams&muv=v1&accloop=1&sdr=6&scnd=1&sat=1&rat=1&sams=1&mtf=1&sfp=1&halh=1&hch=1&hmh=1&hwfh=1&hsth=1&sih=1&unh=1&onw=1&dchat=1&sc=%7B%22pmo%22%3A%22https%3A%2F%2Fwww.microsoft365.com%22%2C%22pmshare%22%3Atrue%7D&ctp=LeastProtected&rct=Normal&wdorigin=TEAMS-ELECTRON.teamsSdk.openFilePreview&wdhostclicktime=1707761524601&wdredirectionreason=Unified_SingleFlush#_Toc124276773)

[4.3 Usability 4](https://word-edit.officeapps.live.com/we/wordeditorframe.aspx?new=1&ui=en-us&rs=en-us&wopisrc=https%3A%2F%2Fkennesawedu.sharepoint.com%2Fsites%2FTeam-4850-02Spr24-Indy--5Helmet%2F_vti_bin%2Fwopi.ashx%2Ffiles%2F69bc20e2047b4c49958462044ffd8ece&wdenableroaming=1&mscc=1&hid=e47ba4a1-003f-4de7-8e1f-ab8fc88a73ad.0&uih=teams&uiembed=1&wdlcid=en-us&jsapi=1&jsapiver=v2&corrid=322ed846-bb17-4035-803e-df9ec8328788&usid=322ed846-bb17-4035-803e-df9ec8328788&newsession=1&sftc=1&uihit=UnifiedUiHostTeams&muv=v1&accloop=1&sdr=6&scnd=1&sat=1&rat=1&sams=1&mtf=1&sfp=1&halh=1&hch=1&hmh=1&hwfh=1&hsth=1&sih=1&unh=1&onw=1&dchat=1&sc=%7B%22pmo%22%3A%22https%3A%2F%2Fwww.microsoft365.com%22%2C%22pmshare%22%3Atrue%7D&ctp=LeastProtected&rct=Normal&wdorigin=TEAMS-ELECTRON.teamsSdk.openFilePreview&wdhostclicktime=1707761524601&wdredirectionreason=Unified_SingleFlush#_Toc124276774)

[4.8 Other 4](https://word-edit.officeapps.live.com/we/wordeditorframe.aspx?new=1&ui=en-us&rs=en-us&wopisrc=https%3A%2F%2Fkennesawedu.sharepoint.com%2Fsites%2FTeam-4850-02Spr24-Indy--5Helmet%2F_vti_bin%2Fwopi.ashx%2Ffiles%2F69bc20e2047b4c49958462044ffd8ece&wdenableroaming=1&mscc=1&hid=e47ba4a1-003f-4de7-8e1f-ab8fc88a73ad.0&uih=teams&uiembed=1&wdlcid=en-us&jsapi=1&jsapiver=v2&corrid=322ed846-bb17-4035-803e-df9ec8328788&usid=322ed846-bb17-4035-803e-df9ec8328788&newsession=1&sftc=1&uihit=UnifiedUiHostTeams&muv=v1&accloop=1&sdr=6&scnd=1&sat=1&rat=1&sams=1&mtf=1&sfp=1&halh=1&hch=1&hmh=1&hwfh=1&hsth=1&sih=1&unh=1&onw=1&dchat=1&sc=%7B%22pmo%22%3A%22https%3A%2F%2Fwww.microsoft365.com%22%2C%22pmshare%22%3Atrue%7D&ctp=LeastProtected&rct=Normal&wdorigin=TEAMS-ELECTRON.teamsSdk.openFilePreview&wdhostclicktime=1707761524601&wdredirectionreason=Unified_SingleFlush#_Toc124276775)

[5.0 External Interface Requirements 4](https://word-edit.officeapps.live.com/we/wordeditorframe.aspx?new=1&ui=en-us&rs=en-us&wopisrc=https%3A%2F%2Fkennesawedu.sharepoint.com%2Fsites%2FTeam-4850-02Spr24-Indy--5Helmet%2F_vti_bin%2Fwopi.ashx%2Ffiles%2F69bc20e2047b4c49958462044ffd8ece&wdenableroaming=1&mscc=1&hid=e47ba4a1-003f-4de7-8e1f-ab8fc88a73ad.0&uih=teams&uiembed=1&wdlcid=en-us&jsapi=1&jsapiver=v2&corrid=322ed846-bb17-4035-803e-df9ec8328788&usid=322ed846-bb17-4035-803e-df9ec8328788&newsession=1&sftc=1&uihit=UnifiedUiHostTeams&muv=v1&accloop=1&sdr=6&scnd=1&sat=1&rat=1&sams=1&mtf=1&sfp=1&halh=1&hch=1&hmh=1&hwfh=1&hsth=1&sih=1&unh=1&onw=1&dchat=1&sc=%7B%22pmo%22%3A%22https%3A%2F%2Fwww.microsoft365.com%22%2C%22pmshare%22%3Atrue%7D&ctp=LeastProtected&rct=Normal&wdorigin=TEAMS-ELECTRON.teamsSdk.openFilePreview&wdhostclicktime=1707761524601&wdredirectionreason=Unified_SingleFlush#_Toc124276776)

[5.1 User Interface Requirements 4](https://word-edit.officeapps.live.com/we/wordeditorframe.aspx?new=1&ui=en-us&rs=en-us&wopisrc=https%3A%2F%2Fkennesawedu.sharepoint.com%2Fsites%2FTeam-4850-02Spr24-Indy--5Helmet%2F_vti_bin%2Fwopi.ashx%2Ffiles%2F69bc20e2047b4c49958462044ffd8ece&wdenableroaming=1&mscc=1&hid=e47ba4a1-003f-4de7-8e1f-ab8fc88a73ad.0&uih=teams&uiembed=1&wdlcid=en-us&jsapi=1&jsapiver=v2&corrid=322ed846-bb17-4035-803e-df9ec8328788&usid=322ed846-bb17-4035-803e-df9ec8328788&newsession=1&sftc=1&uihit=UnifiedUiHostTeams&muv=v1&accloop=1&sdr=6&scnd=1&sat=1&rat=1&sams=1&mtf=1&sfp=1&halh=1&hch=1&hmh=1&hwfh=1&hsth=1&sih=1&unh=1&onw=1&dchat=1&sc=%7B%22pmo%22%3A%22https%3A%2F%2Fwww.microsoft365.com%22%2C%22pmshare%22%3Atrue%7D&ctp=LeastProtected&rct=Normal&wdorigin=TEAMS-ELECTRON.teamsSdk.openFilePreview&wdhostclicktime=1707761524601&wdredirectionreason=Unified_SingleFlush#_Toc124276777)

[5.2 Hardware Interface Requirements 4](https://word-edit.officeapps.live.com/we/wordeditorframe.aspx?new=1&ui=en-us&rs=en-us&wopisrc=https%3A%2F%2Fkennesawedu.sharepoint.com%2Fsites%2FTeam-4850-02Spr24-Indy--5Helmet%2F_vti_bin%2Fwopi.ashx%2Ffiles%2F69bc20e2047b4c49958462044ffd8ece&wdenableroaming=1&mscc=1&hid=e47ba4a1-003f-4de7-8e1f-ab8fc88a73ad.0&uih=teams&uiembed=1&wdlcid=en-us&jsapi=1&jsapiver=v2&corrid=322ed846-bb17-4035-803e-df9ec8328788&usid=322ed846-bb17-4035-803e-df9ec8328788&newsession=1&sftc=1&uihit=UnifiedUiHostTeams&muv=v1&accloop=1&sdr=6&scnd=1&sat=1&rat=1&sams=1&mtf=1&sfp=1&halh=1&hch=1&hmh=1&hwfh=1&hsth=1&sih=1&unh=1&onw=1&dchat=1&sc=%7B%22pmo%22%3A%22https%3A%2F%2Fwww.microsoft365.com%22%2C%22pmshare%22%3Atrue%7D&ctp=LeastProtected&rct=Normal&wdorigin=TEAMS-ELECTRON.teamsSdk.openFilePreview&wdhostclicktime=1707761524601&wdredirectionreason=Unified_SingleFlush#_Toc124276778)

[5.3 Software Interface Requirements 4](https://word-edit.officeapps.live.com/we/wordeditorframe.aspx?new=1&ui=en-us&rs=en-us&wopisrc=https%3A%2F%2Fkennesawedu.sharepoint.com%2Fsites%2FTeam-4850-02Spr24-Indy--5Helmet%2F_vti_bin%2Fwopi.ashx%2Ffiles%2F69bc20e2047b4c49958462044ffd8ece&wdenableroaming=1&mscc=1&hid=e47ba4a1-003f-4de7-8e1f-ab8fc88a73ad.0&uih=teams&uiembed=1&wdlcid=en-us&jsapi=1&jsapiver=v2&corrid=322ed846-bb17-4035-803e-df9ec8328788&usid=322ed846-bb17-4035-803e-df9ec8328788&newsession=1&sftc=1&uihit=UnifiedUiHostTeams&muv=v1&accloop=1&sdr=6&scnd=1&sat=1&rat=1&sams=1&mtf=1&sfp=1&halh=1&hch=1&hmh=1&hwfh=1&hsth=1&sih=1&unh=1&onw=1&dchat=1&sc=%7B%22pmo%22%3A%22https%3A%2F%2Fwww.microsoft365.com%22%2C%22pmshare%22%3Atrue%7D&ctp=LeastProtected&rct=Normal&wdorigin=TEAMS-ELECTRON.teamsSdk.openFilePreview&wdhostclicktime=1707761524601&wdredirectionreason=Unified_SingleFlush#_Toc124276779)

[5.4 Communication Interface Requirements 4](https://word-edit.officeapps.live.com/we/wordeditorframe.aspx?new=1&ui=en-us&rs=en-us&wopisrc=https%3A%2F%2Fkennesawedu.sharepoint.com%2Fsites%2FTeam-4850-02Spr24-Indy--5Helmet%2F_vti_bin%2Fwopi.ashx%2Ffiles%2F69bc20e2047b4c49958462044ffd8ece&wdenableroaming=1&mscc=1&hid=e47ba4a1-003f-4de7-8e1f-ab8fc88a73ad.0&uih=teams&uiembed=1&wdlcid=en-us&jsapi=1&jsapiver=v2&corrid=322ed846-bb17-4035-803e-df9ec8328788&usid=322ed846-bb17-4035-803e-df9ec8328788&newsession=1&sftc=1&uihit=UnifiedUiHostTeams&muv=v1&accloop=1&sdr=6&scnd=1&sat=1&rat=1&sams=1&mtf=1&sfp=1&halh=1&hch=1&hmh=1&hwfh=1&hsth=1&sih=1&unh=1&onw=1&dchat=1&sc=%7B%22pmo%22%3A%22https%3A%2F%2Fwww.microsoft365.com%22%2C%22pmshare%22%3Atrue%7D&ctp=LeastProtected&rct=Normal&wdorigin=TEAMS-ELECTRON.teamsSdk.openFilePreview&wdhostclicktime=1707761524601&wdredirectionreason=Unified_SingleFlush#_Toc124276780)

[APPENDICES 4](https://word-edit.officeapps.live.com/we/wordeditorframe.aspx?new=1&ui=en-us&rs=en-us&wopisrc=https%3A%2F%2Fkennesawedu.sharepoint.com%2Fsites%2FTeam-4850-02Spr24-Indy--5Helmet%2F_vti_bin%2Fwopi.ashx%2Ffiles%2F69bc20e2047b4c49958462044ffd8ece&wdenableroaming=1&mscc=1&hid=e47ba4a1-003f-4de7-8e1f-ab8fc88a73ad.0&uih=teams&uiembed=1&wdlcid=en-us&jsapi=1&jsapiver=v2&corrid=322ed846-bb17-4035-803e-df9ec8328788&usid=322ed846-bb17-4035-803e-df9ec8328788&newsession=1&sftc=1&uihit=UnifiedUiHostTeams&muv=v1&accloop=1&sdr=6&scnd=1&sat=1&rat=1&sams=1&mtf=1&sfp=1&halh=1&hch=1&hmh=1&hwfh=1&hsth=1&sih=1&unh=1&onw=1&dchat=1&sc=%7B%22pmo%22%3A%22https%3A%2F%2Fwww.microsoft365.com%22%2C%22pmshare%22%3Atrue%7D&ctp=LeastProtected&rct=Normal&wdorigin=TEAMS-ELECTRON.teamsSdk.openFilePreview&wdhostclicktime=1707761524601&wdredirectionreason=Unified_SingleFlush#_Toc124276781)

# 1.0 Introduction

This document is used to outline the overall goals for the software requirements for our project. The SRS is broken down into multiple sections based upon the different requirements used, such as design constraints, functional requirements, non-functional requirements, and external interface requirements.

## 1.1 Overview

Overall, the project that we are working on is trying to create a sensor that can be added to a football, or any other contact sports helmet, that has the ability to track a high stress impact and then report this to the coach or medical professionals on the sideline. The purpose of this is to allow them to get a better idea of when a hit could lead to a concussion to help get the player medical care sooner.

## 1.2 Project Goals

The main goal of our project is to create a device that can be placed inside the helmet of a football player that can quickly and accurately alert the sideline when a major hit has occurred and there is a possibility that the player has a concussion. The device will be able to work wirelessly and be able to send a message to the right people on the sideline after the hit.

## 1.3 Definitions and Acronyms

Raspberry Pi – A microcontroller/ minicomputer that we will be using to run the Raspbian OS.

Adafruit Accelerometer – The accelerometer we will be using to track the force on the helmet

Twilio - provides programmable communication tools for making and receiving phone calls, sending and receiving text messages, and performing other communication functions using its web service APIs.

## 1.4 Assumptions

For the helmet to function and send messages as intended it needs to be connected to a Wi-Fi source constantly, and since we don't want to wear the helmet and then hit it hard enough to give us concussions, we will be lowering the threshold for the code to register a large hit and send a text message, however with just changing a few numbers in the code, it will work for a concussion level hit.

# 2.0 Design Constraints

Some design constraints include how sometimes during a game, severe weather can occur, and water damage will compromise the Raspberry Ri. Also, this helmet is only going to track the force of one large hit, however this is not the only way players can suffer a concussion, they can also occur after a bunch of smaller hits add up and then cause the concussion.

## 2.1 Environment

For our environment we will be using a raspberry PI with an accelerometer attached to it. This will allow us to be able to attach the equipment to the helmet of the players. We will be using Twilio to send an SMS message to the people on the sideline. We will need to have a stable Wi-Fi connection for the messages to send the messages.

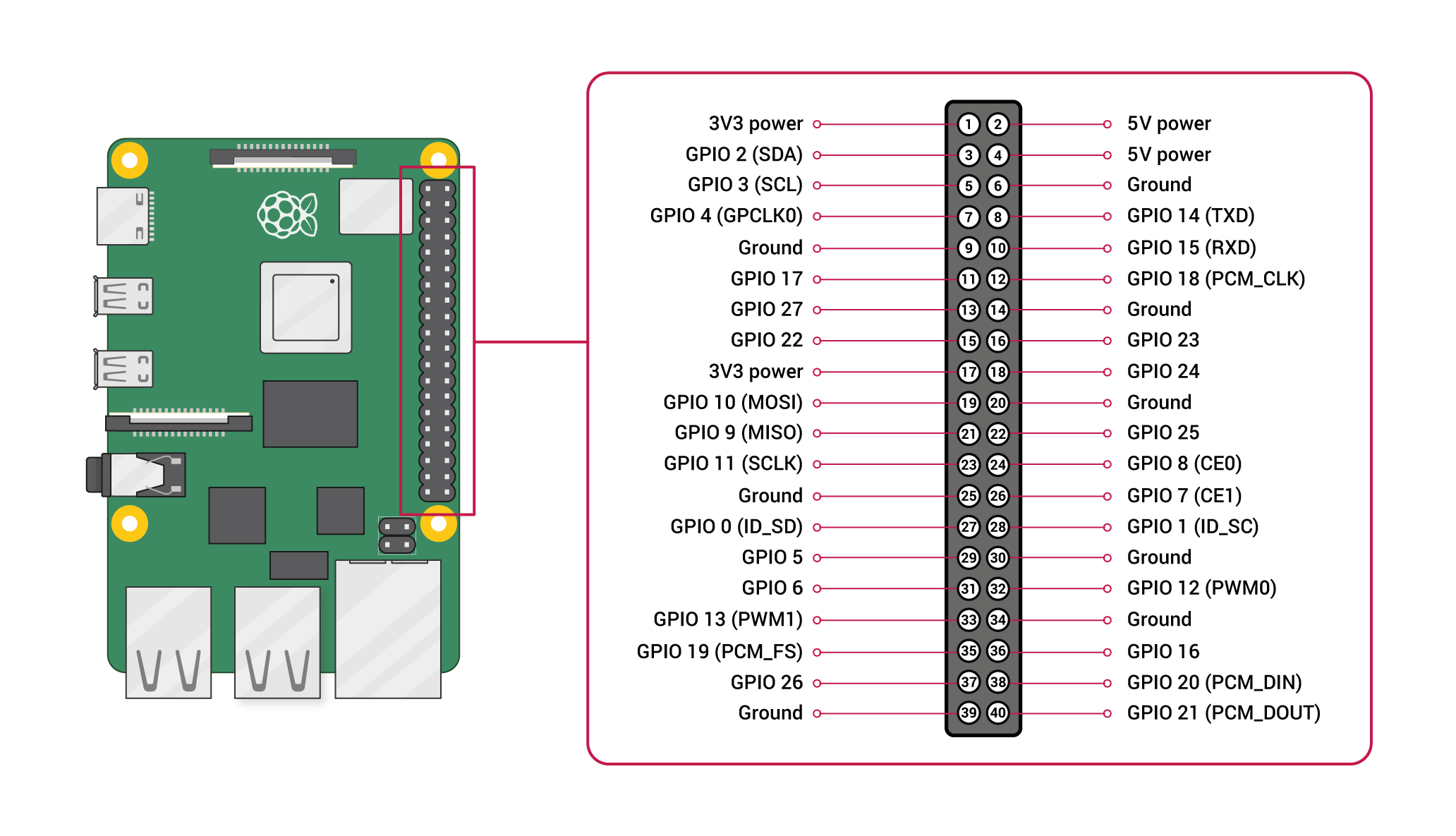
2.2 User Characteristics

We want this helmet to be used for players who are more likely to receive a concussion, as they are our target users. This would be players like the Offensive/Defensive Linemen, Quarterback, Center, Wide Receivers, and Running Backs. Any player can suffer a big hit however these positions are constantly being hit every play.

## 2.3 System

The system is being run off a raspberry PI which has limiting computing potential. However, in our use case the system will be strong enough to make the needed calculations and send the necessary information to the people on the sideline.

# 3.0 Functional Requirements



*Raspberry Pi Forums*

Wiring Colors:

Green - 3.3V

Gray - GRND

Blue - SCL

Purple –SDA

=============================================================================

Detect Hit

Calculate force received on the hit

Determine if the hit is large enough that it could cause a concussion or other injury

Send message to sideline that the player has been affected.

# 4.0 Non-Functional Requirements

## 4.1 Security

The system will be running off wi-fi to communicate with Twilio to send a message to the sideline, if the wi-fi were to be corrupted then the information could not be sent. There will be no private information stored on the device so the security risk is low.

## 4.2 Capacity

The device must have the capacity to be able to send messages repeatedly and be able to detect multiple hits.

## 4.3 Usability

The device must be easy to use and understand so it could be used by a multitude of people with a variety of skill levels in technology.

## 4.4 Other

The device must be durable and be able to withstand multiple high impact forces. Since the device will be attached to the helmet it will be taking a lot of force. If this force were to break the device, then the message would not be sent which could result in an important message not being sent.

# 5.0 External Interface Requirements

## 5.1 User Interface Requirements

The system must be able to send a message to the people on the sideline that is in a readable format that the people on the sideline can use and understand to help the player. The message will contain information about the impact.

## 5.2 Hardware Interface Requirements

The hardware interface requirements will include communication between the accelerometer and the raspberry PI. This will allow for the raspberry pi to receive information on the level of force applied to the helmet and determine if a possible concussion has occurred.

## 5.3 Software Interface Requirements

The raspberry PI must be able to connect to Twilio and send out a message when a large impact has occurred. The raspberry PI must be able to read data about the hit and send it out in a readable and easy to understand format.

## 5.4 Communication Interface Requirements

By using Twilio, the raspberry PI can communicate to the sideline when a major hit occurs. If we were not able to use Twilio, the message would not be sent, and the users on the sideline would not get the needed information.

# APPENDICES

Raspberry Pi Forums: This was the site used to figure out the wiring for the raspberry pi wiring as well as the source of the image.